BOURNVILLE SCHOOL

FAIRFAX MULTI-ACADEMY TRUST

Science 5 Year Curriculum Plan

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Trust Curriculum Policy Extract

The Trust curriculum ensures all pupils in the Trust experience a rich, broad and balanced experience , reflecting the FMAT mission of `Enriching lives, transforming futures`**. We want all our pupils to experience the joy and wonder of learning.**

We place a strong emphasis on nurturing the spiritual, moral, social and cultural development of pupils, along with a firm commitment to developing pupils' resilience and character **through the acquisition of life skills**. We are preparing all our pupils to contribute positively to modern British society **and have a suitable career and destination**. All pupils have the entitlement to study a rich and varied curriculum

The Trust values permeate the curriculum

Excellence: a curriculum of the highest quality to ensure excellent outcomes
Dedication: we believe there is dignity in hard work
Ambition: we want the very best for all of our students.
Integrity: moral purpose will underpin the curriculum decisions we make for our pupils
Tradition: British values, literacy and numeracy underpin the curriculum

A well-constructed curriculum will lead to good results because these results will reflect what pupils have learned. The curriculum is the progression model, enabling pupils to **know more, remember more and be able to do more.**

Teaching and Learning Vision

Knowledge is power. Information is liberating.
Kofi Annan

We believe all students, whatever their background, are able to become experts in the disciplines that they study. Their expertise will be achieved through quality teaching and the dissemination of deep knowledge by highly skilled and knowledgeable subject experts – in every classroom, every lesson, every day.

Our students have the right to be introduced to deep knowledge and a wealth of information from the spectrum of subjects that they study. They will be introduced to, and understand, theories and principles that have influenced, continue to influence, and will influence in the future, the world in which they live. They will be prepared to fully engage in academic discussion about their learning.

This learning will secure a successful place in society for our students. They will go further than they ever thought possible.

Teaching and Learning Vision for the *Science* Department

Our mission is to inspire and equip students to become successful and inquisitive young scientists.

Intent	Implementation
Build on foundations laid and excitement fostered during key stage two science study.	*We start our y7 curriculum with Lab skills and Physics which are highly practical to engage and builds upon the Key Stage 2 sound unit in which pupils identified how sounds are made. We then transition into biology unit 1which has a more qualitative approach giving students a foundational understanding of building blocks of life and reproduction.*
Equip students with real life scientific understanding pertinent to their era and needs.	*Faculty training on the importance of concrete examples, creation of thread modules covering areas pertinent to the needs of students in our context delivered to our KS3 students with lessons grouped in to 3 areas: Learning how to look after yourself (the science of hygiene, diet and holiday survival) Learning how to look after the planet (the science of plastics, pollution and how we affect change)* *Learning how to learn (the science of memory, motivation and how to succeed)*
Communicate cultural capital, the "powerful knowledge" that is subject specific that will enrich students' understanding and conversation pertaining to the world.	*Low stakes retrieval practice homework of key in formation using KOR tasks. Clear explanation phase with students benefitting from balanced distribution of subject specialists. Availability of extracurricular science clubs available to all year groups. Trip to Pitt Rivers museum in Oxford Y11. Y10 UOB Sci-fi and forensic science trip. Leicester Space centre Trip Y9*
Acquire sound numeracy and literacy skills.	*Remapped KS4 science curriculum to allow students to gain statistical and standard form skill in maths lessons before Ecology unit in Biology and Energy unit in Physics. Incorporation of "important word to learn" tier two language slide. Maths in Science walking talking mock.*
Upskill students with qualifications necessary to enable them to progress to competitive level 3 academic or vocational study	*Rigorous assessment regime with regular checkpoint tasks with pre-scripted tailored feedback to reduce teacher workload. Use of Tutor time to support y11 pp students who following assessment are furthest from target using. L9 cohort master classes focussing on accessing level 8 and 9 questions*
Sequencing and improving curricula in response to the pedagogical needs of our students rather than being content with an unchanging body of resources or prescribed specification order.	*Remapped KS4 science curriculum to allow students to gain statistical and standard form skill in maths lessons before Ecology unit in Biology and Energy unit in Physics Teaching organisation before cell biology allows students to start their GCSE studies with tangible and relatable concepts before moving on to Cell Biology. Y9 Electricity unit brought before Energy unit because concrete concepts are more appropriate to study first, also RP14 benefits from work on equations covered in electricity.*
Enquire empirically using appropriate apparatus and techniques.	*Working scientifically module in y9, working scientifically posters, Practical work books, KS3 Science club, Lunchtime Practical club, teacher practical competition.*

How we teach

Intent	Implementation
Structured talk	*Embedding Structured talk slide in each lesson, training on delivery of agreed approach.*
Practical skills	*Working scientifically module in y9, working scientifically posters, practical work books, KS3 Science club, Lunchtime Practical club, teacher practical competition.*
Exude positivity	*Structured restorative conversations, personalised encouragement feedback, AAHT FGF phone call*
Low stakes testing	*KOR tasks, Checkpoint tasks, TfE model, SMHW knowledge quizzing, Seneca, Accelerator cohort, Master classes.*
Tailored feedback	*LIVE IN LESSON FEEDBACK TO SLOP, Checkpoint tasks, Milestone/mock feedback protocol, highlighter policy*

At the end of Year 11 students in *Science* will….

Know…

Students will know the key concepts that underpin science that are included within topics such as cells (mitosis), respiration (metabolism), energy (transfers), forces (weight), particle model (changes of state) and the periodic table (halogens). The ability to know these concepts will then allow the students to move onto the understanding phase of the curriculum.

Understand…

The way scientific ideas flow through the 5 year curriculum at Bournville will support students in building a deep understanding of key scientific concepts. A few examples of these concepts are that they will understand how the heart is able to efficiently pump blood around the body, they will understand how different forms of radiation are used in industry and finally understand how a process like distillation is used to separate solutions with differing boiling points. Students will therefore have a clear understanding of the key scientific concepts that underpin biology, chemistry and physics by the time they leave in Y11.

Be able to…

Students will be able to take the key topics covered over the 5 years of the course and apply them in many different contexts, allowing students to make links to the world they live in. Examples of these contexts are that they will be able to talk about, read and write about scientific principles such as diffusion and collision theory using the correct terminology. They will be able to represent science in its many forms both mathematically in graphs, and tables and visually through models – for example the model of solids, liquids and gases. They will have the ability to carry out scientific skills, whether it be investigating, observing, experimenting or testing out ideas and then analysing them.

Have been exposed to the following knowledge, theories, texts and experiences that span beyond the GCSE specification

Lessons will also incorporate aspects of KS5 content to extend the learning for students, for example within the structure of the heart students will be exposed to the names of the valves that prevent the backflow of blood, they will also go into more detail about the role of the kidney in osmoregulation which is a key topic in A level biology. Experiences *Availability of extracurricular science clubs available to all year groups.*

Developed their cultural and social capital through the following extra-curricular work

This will occur throughout the five years via opportunities such as Science club where students can, for example, make simple bath bombs that can then be made at home will allow students to gain some experience in creating products at home. A zoo visit for Y7 will allow students to familiarise themselves with exotic and Sexual and health education sessions through our thread lessons that are weaved through our curriculum. These focus on hygiene, memory and the brain, STIs, Summer survival and human weight. In Y10 alongside the curriculum work students are taught about more types of contraception and diseases associated with unprotected sex. The purpose of all of these sessions are to educate students to make the right decisions when it comes to relationships and building a family.

5 Year Curriculum Plan

Year 7 *Science* at Bournville School

The Bournville School Year 7 Science curriculum has been designed to ensure that all students make good progress from their individual starting points. Through a logical sequence of knowledge and concepts (detailed below) we have designed the curriculum to be fully inclusive of all backgrounds. To ensure that we cater towards our intake, we make use of differentiated tasks and place scientific keywords on slides. Throughout lessons there is support for our PP students to close the disadvantaged gap. Creating a challenging yet developmental curriculum that doesn't depend upon prior learning for success, as we have done, ensures that each student is able to make genuine progress towards understanding higher-order thinking and content regardless of their background. For example the study of 'Energy Costs' in Y7 will enable students to evaluate their own household's consumption of non-renewables and allow them to look to the use of renewables.

The units listed below are studied in this order because using a logical order of objectives equips students for success at GCSE. It also provides a method to follow student progress as their understanding develops during KS3. In year 7 the KS3 students are taught practical skills at the start of the course which focus on HSW principles such as setting up a good experiment, safety, taking measurements and making calculations. These principles are taught first to allow all students to be able to safety complete investigations during the year and to be able to understand the key aspects of how to develop investigations and analyse the results. The reason for this is to refine the HSW skills of our Y7 students in preparation for the investigative aspects of GCSE.

One of the first units that is taught in Y7 after the lab skills section is the 'Particle Model' which includes lessons on states of matter, melting and freezing and diffusion, among others. The reason for this is because everything is made from particles and knowledge of their existence will support the development of more challenging topics. For example, we move onto Separating Mixtures later in the year which builds on the students' knowledge of the particle model to explain how mixtures can be separated by processes such as evaporation and distillation. Most KS3 schemes begin with Cells, however students will ask questions like 'what are cells made of?' and more challenging concepts such as exchange will be difficult to access. By having the Particle model before this unit students will be able to then grasp more challenging concepts such as diffusion in the 'Cells' unit of biology as they will now be able to visualise gases and liquids in particle form. By connecting smaller ideas to more abstract ideas, students will be better prepared to apply these concepts when approaching an unfamiliar topic. For example, 'Matter', topics are ordered from simpler, more concrete topics; 'Particle model and 'Separating mixtures' (taught in Y7), to more abstract ones; 'Periodic table' and 'Elements' (taught in Y9). These have been created to avoid repetition, draw on various scientific skills and use different contexts.

The remaining units (energy costs, metals and non-metals etc.) taught in Y7 are all concrete in nature, these will be revisited either in Y8, Y9 or both, alongside more complex units to develop the students understanding of the big ideas in KS3 science. There is a checkpoint assessed task at the end for each topic, this allows us to thoroughly examine the learning of pupils and address any weaknesses in their understanding. In addition to the milestone assessments, an end of year exam is completed in line with the school's assessment calendar. We offer the opportunity to year 7 pupils to attend a science club. The science club is aimed at developing the curiosity that students have surrounding science, by promoting

topics that aren't always in the curriculum which then enable the students to make scientific applications to more than just the classroom.

Year 7 Units of Study		Length of unit
Intro	Lab skills (B/C/P)	
Unit 1	Energy transfer	
Unit 2	Particle model	
Unit 3	Cells and organisms	
Unit 4	Energy costs	
Unit 5	Separating mixtures	
Unit 6	Movement	
Unit 7	Speed	
Unit 8	Metals and non-metals	
Unit 9	Variation	
Unit 10	Contact forces	
Unit 11	Earth structure	
Unit 12	Human Reproduction	
Unit 13	Gravity and the universe	

Year 8 *Science* at Bournville

The Bournville School Year 8 Science curriculum has been designed to ensure that all students make good progress from their individual starting points after completing the Y7 curriculum. This progress is achieved because students may complete KS3 with knowledge of individual concepts but lack the understanding to apply their knowledge to unfamiliar contexts. This curriculum provides students with this understanding. Using big ideas, the generalisations, principles and models which connect concepts are at the heart of our syllabus. This is how students can learn to see the world analytically, to explain phenomena and make predictions – all skills they need for their next stage of scientific learning. Therefore through a logical sequence of knowledge and concepts (detailed below) we have designed the curriculum to be fully inclusive of all backgrounds as although our some of our intake has a good level of experience in the sciences and will have developed well throughout Y7, some students may not have had that luxury and may struggle to grasp concepts. The use of differentiated tasks and placing scientific keywords on slides throughout lessons supports our PP students to close the disadvantaged gap. Therefore, creating a challenging yet developmental curriculum as we have done, ensures that each student is able to make genuine progress towards understanding higher-order thinking and content regardless of their background and prior understanding. For example, the study of 'Earths resources' in Y8 will enable students to evaluate their own households recycling to move them towards a more sustainable way of life.

As in Y7 the units listed below are studied in this order because using a logical order of objectives, this curriculum equips students for success at GCSE. In year 8, KS3 students are again taught practical skills at the start of the course. These principles are taught first to allow all students to be able to understand the key aspects of how to analyse and interpret the results from investigations. The reason for this is to refine the HSW skills of our Y8 students in preparation for the investigative aspects of GCSE.

One of the first units taught in Y8 after the lab skills section, is the 'Digestion' unit which includes lessons on food tests, unhealthy diets, the digestive system and enzymes in digestion, among others. The reason for this is because this unit builds on the units of 'Cell's and 'Movement' that were taught in Y7. Then we move onto 'Breathing and circulation' which builds on the students' knowledge of specialised red blood cells and diffusion of gases. The remaining units (Acids and Alkalis, Work and Magnetism etc.) taught in

Y8 are all units that have either had simple concepts introduced in Y7 or will lead into more complex ideas in Y9 (for example the idea of 'Reactions', Metals and non-metals was taught in Y7 which leads into Acids and Alkalis and Chemical energy in Y8 and finally the unit Types of reaction which is delivered in Y9). There is a checkpoint assessed task at the end for each topic, this allows us to thoroughly examine the learning of pupils and address any weaknesses in their understanding. In addition to the milestone assessments, an end of year exam is completed in line with the school's assessment calendar.

We offer the opportunity to year 8 pupils to attend a science club. The science club is aimed at developing the curiosity that students have surrounding science, by promoting topics that aren't always in the curriculum, which then enable the students to see the relevance of science in the real world outside of the classroom.

Year 8 Units of Study		Length of unit
Intro	Lab skills/data handling/HSW	
Unit 1	Heating and cooling	
Unit 2	Acids and alkalis	
Unit 3	Digestion	
Unit 4	Work	
Unit 5	Chemical energy	
Unit 6	Breathing and circulation	
Unit 7	Magnetism	
Unit 8	Earth resources	
Unit 9	Interdependence	
Unit 10	Pressure	
Unit 11	Climate	
Unit 12	Plant reproduction	
Unit 13	Waves	

Year 9 *Science* at Bournville

The Bournville School Year 9 Science curriculum has been designed to ensure that all students make good progress from their individual starting points after completing the Y7 and Y8 curriculum. This progress is achieved because students may complete KS3 with knowledge of individual concepts but lack the understanding to apply their knowledge to unfamiliar contexts. This curriculum provides students with this understanding. Using the generalisations, principles and models which connect scientific concepts are at the heart of our syllabus. This is how students can learn to see the world analytically, to explain phenomena and make predictions – all skills they need for their next stage of scientific learning. Through a logical sequence of knowledge and concepts (detailed below) we have designed the curriculum to be fully inclusive of all backgrounds. Although some of our intake has a good level of experience in the sciences and will have developed well throughout Y7 and Y8, some students may have struggled to grasp concepts. To aid in their development we make use of differentiated tasks and placing scientific keywords on slides throughout lessons and support our PP students to close the disadvantaged gap. Creating a challenging yet developmental curriculum as we have done, ensures that each student is able to make genuine progress towards understanding higher-order thinking and content regardless of their background and prior understanding. For example, the study of 'Inheritance' in Y9 will enable students to analyse their own features to make predictions of the features their children may inherit.

As in Y7 and Y8 the units listed below are studied in this order because using a logical order of objectives, to equip students for success at GCSE. It also provides a method to follow student progress as their understanding develops during KS3. In year 9 of KS3 students are again taught practical skills at the start of the course. These principles are taught first to allow all students to be able to understand the key aspects of how to analyse and interpret the results from investigations. The reason for this is to refine the HSW skills of our Y9 students in preparation for the investigative aspects of GCSE.

One of the first units that is taught in Y9 after the lab skills section is the 'Respiration and Photosynthesis' unit which includes lessons on aerobic respiration, biotechnology, leaves and the stem amongst others. The reason for this topic is because the unit builds on the units of 'Interdependence' and 'Plant reproduction' that were taught in Y8. We teach 'Electricity' and 'Electromagnetism' which build on the 'Magnets' unit taught in Y8. The remaining units (Evolution, Inheritance etc.) taught in Y9 are all units that have either had simple concepts introduced in Y7 or Y8 and how now lead into more complex ideas in Y9. There is a checkpoint assessed task at the end for each topic, which allows us to thoroughly examine the learning of pupils and address any weaknesses in their understanding. In addition to the milestone assessments an end of year exam is completed in line with the school's assessment calendar.

Year 9 Units of Study		Length of unit
Intro	Lab skills/data handling/HSW - BCP skills	
Unit 1	Electricity	
Unit 2	Elements and the periodic table	
Unit 3	Respiration and photosynthesis	
Unit 4	Electromagnetism	
Unit 5	Types of reaction	
Unit 6	Evolution	
Unit 7	Uses of waves	
Unit 8	Inheritance	
Unit 9	GCSE transition Cells	
Unit 10	GCSE transition Atomic structure	
Unit 11	GCSE transition Energy	

Year 10 *Biology* at Bournville*

The Bournville Year 10 *biology* curriculum prepares all pupils to build their knowledge and understanding of key concepts in biology such as circulation and immunity, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

These units are studied in this order because After 'Cells' that was taught in the summer term of Y9 we move to 'Organisation' which looks into animal cells, tissues, organs and organ systems (digestive; respiratory; circulatory) and then plant tissues and organ systems. These topics again build on each other, developing knowledge as we go and have a link with all the content in the 'Cells' topic.

We made a decision to teach 'Bioenergetics' instead of 'Infection' as the bioenergetics topic builds on the students' knowledge of plant cells and organ systems (Cells & Organisation) when they study photosynthesis, and once they get to respiration their knowledge of the heart (Organisation) and mitochondria (Cells) provided a stepping stone to access the knowledge. Each topic is assessed by a series of checkpoint tasks at the end of each sub-unit.

Then we move to 'Infection and response'. This topic builds on the students' knowledge of bacteria from the 'Cells' topic which enables a demonstration of knowledge recall. Each lesson in this topic builds on the next via learning about the different pathogens before the students discover how they can be treated to then how we develop the treatments. Once these key topics are taught the students are then delivered the content on monoclonal antibodies and plant disease/defenses (All separates Biology). Within this topic each sub-unit has a checkpoint assessed task that pupils complete.

The final unit studied in year 10 is Ecology. Ecology has been moved to the end of year 10 so that we can make better use of the weather for completing the required practical outside and on the school fields. In addition to this, Ecology is much less challenging than the Inheritance and homeostasis topics so we leave this till last. This also enables time to focus on revision at the close of the year before the GCSE exams.

In addition to the topic sub-unit checkpoint assessment tasks that pupils complete, there is a series of milestone assessments that run in line with the school's assessment calendar. An end of year exam will also be completed by pupils.

Year 10 Units of Study		Length of unit
Unit 1	Organisation	27
Unit 2	Bioenergetics	15
Unit 3	Infection and response	12
Unit 4	Ecology	24 (15 C)

Year 11 *Biology* at Bournville*

The Bournville Year 11 *biology* curriculum prepares all pupils to build their knowledge and understanding of key concepts in biology such as inheritance and adaptations, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

The first topic that is taught in Y11 is 'Inheritance, variation and evolution'. This is because it is one of the most challenging and interesting out of the 7 topics and by this point in Y11 students have really refined their skills and knowledge to support them in the development and understanding of this topic. Each lesson is sequenced to build on prior knowledge from the last, for example we start the topic with sexual and asexual reproduction which then leads onto meiosis (the production of gametes). Each sub-unit within the topics pupils complete an assessment checkpoint task.

The final unit we move onto is homeostasis. Again this is one of the more difficult biology topics and as with all others needs an understanding of the cells topic. Homeostasis, we believe, is also better placed after ecology as adaption and surviving in extreme environments is taught in ecology which links to the principles of homeostasis and negative feedback in the homeostasis module. Due to the high demand for knowledge in this topic there is a mid-topic (Nervous system) and end of topic (Hormonal coordination) checkpoint assessed task that pupils complete.

Each topic has a checkpoint assessed task at the end of each sub-unit. In addition to the milestone assessments and an end of year exam are completed in line with the school's assessment calendar.

Year 11 Units of Study		Length of unit
Unit 1	Inheritance and evolution	27 (21C)

Unit 2	Homeostasis	21 (12 C)

Year 10 *Chemistry* at Bournville*

The Bournville Year 10 *chemistry* curriculum prepares all pupils to build their knowledge and understanding of key concepts in chemistry such as ionic and covalent bonding, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

These units are studied in this order because Bonding builds upon KS3 knowledge. It provides much of the foundation knowledge needed for the GCSE topics which need understanding of structure, bonding and the properties of matter. Then we move to Organic chemistry, this topic builds upon KS3 knowledge gained Mixtures and Separation, Combustion as well as GCSE C2 Bonding. It provides and builds all knowledge from first basics of crude oil and basic hydrocarbons, following to more advance organic compounds such as polymers, esters and polyesters. For our teaching schedule, this topic is split into two main parts C7a – aspects of distillation, cracking and basic hydrocarbons taught in year 10 and develops further during 7b to cover the more conceptual aspects in Y11. Then we move to Energy changes, this topic builds upon KS3 knowledge as well as GCSE C2 Bonding. It provides knowledge of energy changes in reactions linking bond breaking and making with energy level diagrams and hydrogen fuel cells. In the later part of the topic, the concept of chemical equilibria is introduced before it returns in Year 11. C4 Chemical Changes naturally follows on next, building on previous topics in KS3 and C2 Bonding by providing specific examples of chemical reactions, improving on the detail provided in KS3. Knowledge of the reactivity series early in the topic progresses into displacement and extraction of metals, which can progress into conceptual ideas in C10 Using Resources in year 11. We then transition to C6 Rates to allow for the application of previously learned knowledge in C4 Chemical Changes and C5 Energy changes. The Rates topic builds upon KS3 knowledge as well as GCSE C1 Atomic Structure it provides knowledge of reaction kinetics and how rate of reaction can be changed as well as linking to reaction profiles and the use of catalysts. The penultimate topic of year 10 is C3 Quantitative chemistry which acts as fundamental knowledge of quantitative chemistry and the application of quantitative interpretation in other GCSE topics that are taught in Y11. By teaching this topic late in year 10, it allows for the fundamental knowledge of neutralization in C4 Chemical Changes to be built on, whilst ensuring prerequisite knowledge is present from cross curricular links with Mathematics. Finally Y10 finish with Chemistry of the atmosphere which builds upon knowledge of C4 Chemical Changes, C5 Energy Changes and C7 Organics as well as reviewing, presenting and comparison of data.

Each topic has a checkpoint assessed task at the end of each sub-unit. In addition to the milestone assessments and an end of year exam are completed in line with the school's assessment calendar.

Year 10 Units of Study		Length of unit
Unit 1	Bonding	10
Unit 2	Organic chemistry 7a (Up to cracking)	7
Unit 3	Energy changes	7
Unit 4	Chemical changes	17
Unit 5	Rates of reaction	8
Unit 6	Quantitative chemistry	17
Unit 7	Chemistry of the atmosphere	10

Year 11 *Chemistry* at Bournville*

The Bournville Year 11 *chemistry* curriculum prepares all pupils to build their knowledge and understanding of key concepts in chemistry such as fractional distillation and global warming, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

The first unit taught in Y11 Chemistry is Chemical analysis, it requires knowledge of C1 Atomic structure from the alkali metals, transition metals and halogens section which enables a spiral recall of the curriculum. After we move to Using resources which requires knowledge of C4 Chemical Changes C5 Energy Changes and C7 Organics as well as reviewing, presenting and comparison of data. With the rates topic all aspects up to equilibria were taught, now in Y11 the concept of chemical equilibria is introduced as to build on knowledge gain so far during Y11. The more conceptual aspects of Organic chemistry which are found in Chemistry only are taught Y11 as the students are more developed leaners and will be able to access the content much better.

Each topic has a checkpoint assessed task at the end of each sub-unit. In addition to the milestone assessments and an end of year exam are completed in line with the school's assessment calendar.

Year 11 Units of Study		Length of unit
Unit 1	Chemical analysis	14
Unit 2	Using resources	16
Unit 3	Equilibrium aspect of rates unit	8
Unit 4	Organic chemistry 7b reactions & polymers	10

Year 10 *Physics* at Bournville*

The Bournville Year 10 *physics* curriculum prepares all pupils to build their knowledge and understanding of key concepts in physics such as forces and electricity, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

These units are studied in this order because after teaching energy in Y9, Electricity follows the logical sequence to develop the student's knowledge. The next topic focusses on Particle Models of Matter which requires the knowledge of energy transfer to fully comprehend the ideas of changes of state, motion of particles and pressure. This leads to Atomic Structure which requires the knowledge of energy, particle motion, how electricity is produced in fossil fuel power stations and pressure to fully understand why we use nuclear materials and nuclear power.

Year 10 finishes with Forces, which is the largest of all units. It uses the idea of energy (Work done) to explain how things behave when forces are applied. The unit incorporates ideas from unit 1 Energy for Work done and energy transfers and unit 3 Pressure for Pressure in a liquid and atmospheric pressure, meaning Energy and Particle models of matter must be taught first.

Each topic has a checkpoint assessed task at the end of each sub-unit. In addition to the milestone assessments and an end of year exam are completed in line with the school's assessment calendar.

Year 10 Units of Study		Length of unit
Unit 1	Electricity	16
Unit 2	Particle model of matter	9
Unit 3	Atomic structure	11
Unit 4	Forces	25

Year 11 *Physics* at Bournville*

The Bournville Year 11 *physics* curriculum prepares all pupils to build their knowledge and understanding of key concepts in physics such as light and waves, our students are studying these units because they show a clear progression in challenge and meet the specification criteria that has been placed by AQA.

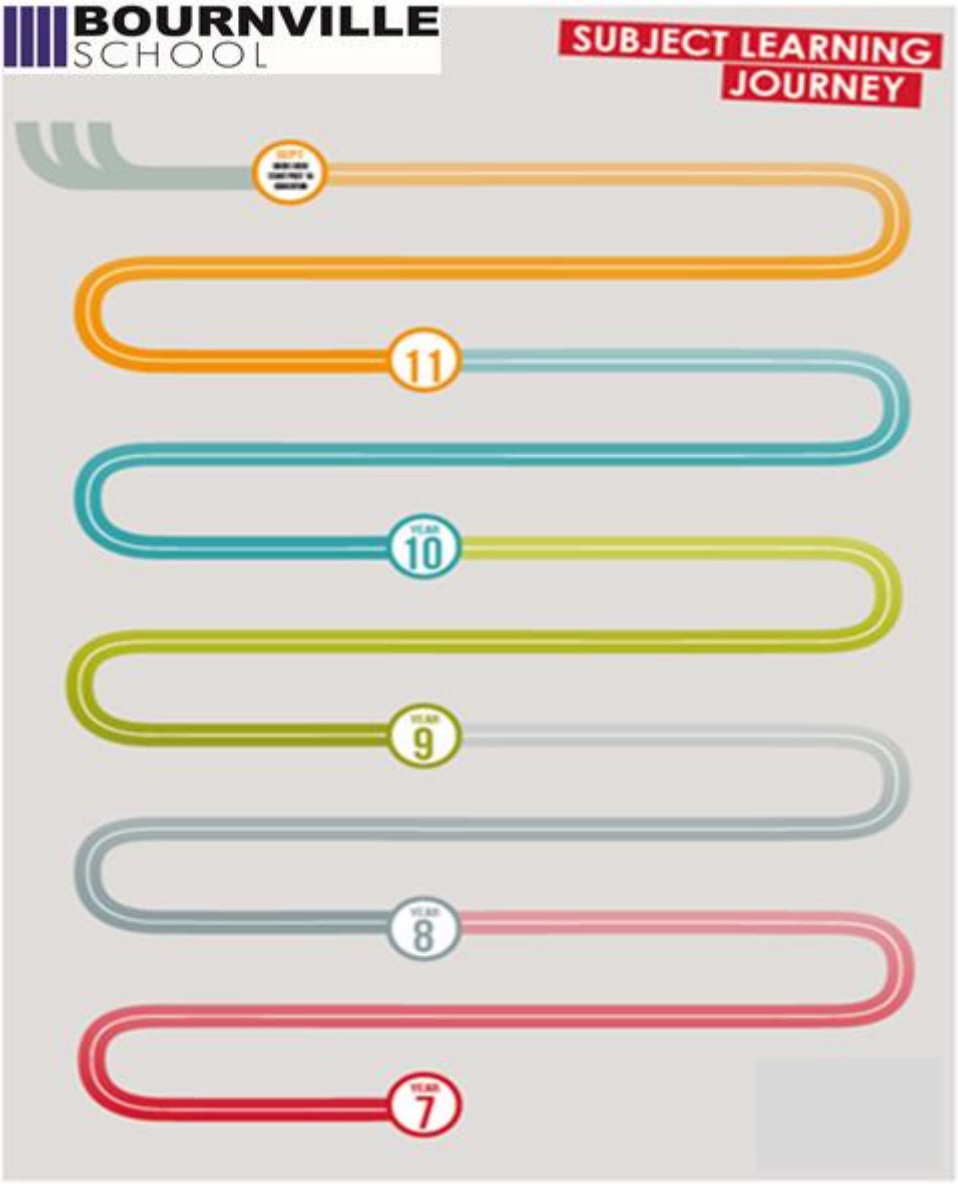
These units are studied in this order because Waves, the first topic of Y11 requires the idea of energy transfer and motion to comprehend the nature of Waves which were taught in Y10. From waves we learn about the different types of wave and in particular EM waves which is knowledge required for the light section of the following topic. The aforementioned topic is Electromagnetism and Light which requires prior knowledge of non-contact forces and electricity from the Forces topic and the Electricity topic taught in year 10. The final topic, Space, is kept until last as it a separate Physics topic only so is only delivered in full to the separate Physics students. Teachers of combined Science must however teach the basics of space to provide students with a breadth of knowledge and not just teach to test.

Each topic has a checkpoint assessed task at the end of each sub-unit. In addition to the milestone assessments and an end of year exam are completed in line with the school's assessment calendar.

Year 11 Units of Study		Length of unit
Unit 1	Waves	16
Unit 2	Magnetism, electromagnetism and light	17
Unit 3	Space physics	7 (4 C)

* The above document outlines the five year curriculum which has moved from a three to two year KS4 in line with the FMAT. The different year groups across the schools will merge onto the pathway above in line with all trust schools at varying points.

The *Subject* Department Learning Journey at a glance



To include – topics, purpose of study and assessment points. To show how and why the curriculum is sequenced in the way in which it is.