Curriculum Map 2024 – 2025 – SCIENCE

Year 7:

Term	Assessment	Topics	Skills	Personal Development
Autumn 1	**Test 1:** 20 marks: Recall questions on energy and cells 30 marks: Application questions on energy and cells **Revision materials:** Energy: https://www.bbc.co.uk/bitesize/topics/zc3g87h Cells: https://www.bbc.co.uk/bitesize/topics/znyycdm	**Energy** • Calculating energy in food and fuels. • Ways of generating electricity • Energy dissipation • How energy is transferred and stored	Interpretation of data from tables and graphs, Calculation of percentages	Students to learn about what energy is, and how it influences every aspect of life, yet is something intangible. Students can question why natural phenomena happen and predict consequences of actions, i.e. what goes up, must come down. Students to also learn about food as a fuel for the human body and how good nutrition can influence health. Uses of renewable and non-renewable resources, pollution, deforestation and how we can do our part in recycling.
		Cells • Plant and animal cells • Observing cells using a microscope • Specialised cells • How substances move in and out of cells • Unicellular organisms	Investigation skills such as learning how to use a microscope	Developing knowledge and curiosity of cell life, cell specialisation. **Students may create their own cells using their knowledge.**
Autumn 2	**Test 2:** 20 marks: Recall questions on energy, cells, particle model, speed and movement 30 marks: Application questions on particle model, speed and movement **Revision materials:** Particle model: https://www.bbc.co.uk/bitesize/topics/z9r4jxs https://www.bbc.co.uk/bitesize/topics/zstp34j Speed: https://www.bbc.co.uk/bitesize/topics/z4brd2p Movement: https://www.bbc.co.uk/bitesize/topics/znyycdm	**Particle model** • Arrangement and movement of particles • in solids, liquids and gases • How the arrangement and movement of • particles changes when a substance changes state • Diffusion • Gas pressure • Atoms, elements and compounds	Investigation skills, Interpretation of data from tables and graphs	All objects are made from the same fundamental building blocks.
		Speed • Forces, how they arise and how they change the motion of an object. • How to measure speed and how to show • the journey of an object using a distance-time graph	Investigation skills, calculating a mean, interpretation of force arrows	Students to compare the average speed of every day actions and how speed affects the time taken to stop.
		Movement • Levels of organisation in multicellular organisms. • Why we have a skeleton and how it • works with our muscles to allow us to move	Analysing diagrams and using comparative language.	Students can compare humans to other organisms in terms of their structure.

Term	Assessment	Topics	Skills	Personal Development
Spring 1	**Test 3:** 20 marks: Recall questions on energy, cells, particle model, speed, movement, separating mixtures, sound, variation and earth structure 30 marks: Application questions on separating mixtures, sound, variation and earth structure **Revision materials:** Separating mixtures: https://www.bbc.co.uk/bitesize/topics/zstp34j https://www.bbc.co.uk/bitesize/topics/zych6g8 Sound: https://www.bbc.co.uk/bitesize/topics/zw982hv Variation: https://www.bbc.co.uk/bitesize/topics/zpffr82 Earth structure: https://www.bbc.co.uk/bitesize/topics/z3fv4wx	**Separating mixtures** • Pure substances and mixtures • Techniques for separating different • substances from their solutions	Evaluation of data skills, use of comparative language skills, percentage increase calculations	Students to learn about the uses of evaporation in society, both naturally with the Maltese Salt Pans and with solvents, such as glue. Students to learn about the various uses of filters in society, from fuel filters to coffee filters, how they work and differences between them.
		Sound • Speed of sound and how sound travels • What changes when we make sounds of a • different pitch or loudness • The structure of the ear and how we hear	Use of comparative language skills	Students to learn about how sounds can affect hearing, with a focus on loud places, such as concerts and how to listen to music safely.
		Variation • The differences between individuals of a species and how they are caused • How variation helps organisms survive in difficult environments	Investigation skills, choosing graph types, plotting graphs and interpreting data	Students to learn why humans can look different from one-another and question how and why this occurred, as well as the benefits of these differences. Students to recognise that it is the right of each individual to take part or observe during experiments involving them (measuring heights of students).
		Earth structure • What the Earth is made from and its structure • How materials are recycled in the rock cycle • Sedimentary, metamorphic and igneous rocks • Ceramics	Using descriptive language with scientific key terms to compare rock types and other materials	Students to learn about the Earth's structure and how our view has changed by scientists building upon each other's ideas to make a new theory that fits the evidence.
Spring 2	**Test 4:** 20 marks: Recall questions on energy, cells, particle model, speed, movement, separating mixtures, sound, variation and earth structure, reproduction and light 30 marks: Application questions on reproduction and light **Revision materials:** Reproduction: https://www.bbc.co.uk/bitesize/topics/zybbkqt Light: https://www.bbc.co.uk/bitesize/topics/zw982hv	**Reproduction** • The changes that take place during • adolescence • Male and female reproductive systems • How new life is created and developed • Birth	Drawing and labelling anatomical diagrams	Students to learn about adolescence and the respect needed to learn about human bodies, even of a gender they do not identify with and learn to respectfully ask questions to sensitive topics. Students to learn about contraceptives and their multiple uses and the consequences of not using contraception. Students to consider that this is a choice for consenting people over 16 to make and that they will do what is right for them at that point in time.
		Light • How we see objects • How light behaves when it hits different • materials • How white light can be split into different • colours and how these colours can be • added up again	Investigation and maths skills, including drawing ray diagrams and measuring angles with a protractor	Students to learn why objects appear different colours and how coloured filters work and how this may be used in, for example, film studios.

Term	Assessment	Topics	Skills	Personal Development
Summer 1	**Test 5:** 20 marks: Recall questions on energy, cells, particle model, speed, movement, separating mixtures, sound, variation and earth structure, reproduction, light, acids and alkalis and electromagnets 30 marks: Application questions on acids and alkalis and electromagnets **Revision materials:** Acids and alkalis: https://www.bbc.co.uk/bitesize/topics/zn6hvcw https://www.bbc.co.uk/bitesize/topics/zypsgk7 Electromagnets: https://www.bbc.co.uk/bitesize/topics/zgy39j6	**Acids and alkalis** • Chemical reactions • Using indicators to show the pH of a substance • How to change the strength of an acid • Neutralisation reactions • Making salts in chemical reactions	Investigation skills including graphing skills and calculation of mean.	Students to recognise what behaviours can be risky to others and how it is their responsibility to minimise risk in Science.
		Electromagnets • What happens in a circuit and how we can model it • What batteries do in circuits • Potential difference, current and resistance • Series and parallel circuits • How to use different components to make circuits do different jobs • Electric charge and how objects become charged.	Investigation skills including drawing and interpreting circuit diagrams and taking accurate measurements.	Students to work collaboratively to complete various practical tasks and to understand why electrical circuits are important to our everyday lives.
Summer 2	**Test 6:** 20 marks: Recall questions on energy, cells, particle model, speed, movement, separating mixtures, sound, variation and earth structure, reproduction, light, acids and alkalis, electromagnets, metals and non-metals, ecosystems 30 marks: Application questions on metals and non-metals, ecosystems, gravity and the universe **Revision materials:** Metals and non-metals: https://www.bbc.co.uk/bitesize/guides/zqwmxnb/revision/1 Ecosystems: https://www.bbc.co.uk/bitesize/topics/zxhhvcw https://www.bbc.co.uk/bitesize/topics/zybbkqt Gravity and the universe: https://www.bbc.co.uk/bitesize/topics/z4brd2p https://www.bbc.co.uk/bitesize/topics/z8c9q6f	**Metals and non-metals** • Chemical reactions of metals and non-metals • Chemical reactions of metals with acids • Chemical reactions of metals with oxygen • Chemical reactions of metals with water • Metal displacement reactions	Investigation skills including graphing skills and calculation of mean.	Considering whether the evidence the students have at hand is sufficient to making a conclusion and the potential implications this may have.
		Ecosystems • How organisms are connected and how • they interact within an ecosystem • Feeding relationships and competition • between species • The lifecycle of flowering plants • Different types of pollination • Plant reproduction	Interpretation of data from tables and graphs,	Students to learn how communities rely on each other in the wild and question the human race's place in this Students to consider the impact of a species being removed from the food chain due to the actions of humans and evaluate the impact that has on the ecosystem as a whole. Students can consider how their habits can influence this.
		Gravity and the universe • The difference between mass and weight • How gravitational force changes with mass • and distance • How gravity keeps objects in their orbits • The size and scale of our solar system • How the movement of the Earth and • moon explains the observations we make • of the Sun and the night sky.	Analysing the scale of models of e.g. the solar system	Students to learn of the Earth's place in the Solar System, Galaxy and Universe and think about their place in each of these scenarios. Students may learn about various models of the universe and can enter a discourse about how opinions can change with new information and with healthy debate on new and potentially inflammatory topics, such as evolution and the heliocentric model of the Solar System

Year 8:

Term	Assessment	Topics	Skills	Personal Development
Autumn 1	**Test 1:** 20 marks: Recall questions on energy, breathing and elements 30 marks: Application questions on energy, breathing and elements **Revision materials:** Energy: https://www.bbc.co.uk/bitesize/guides/ztxnsbk/revision/2 Breathing: https://www.bbc.co.uk/bitesize/topics/zvrrd2p/articles/zbhcg7h Elements: https://www.bbc.co.uk/bitesize/topics/zstp34j https://www.bbc.co.uk/bitesize/guides/ztxnsbk/revision/2	**Energy** • The difference between energy and • temperature • 'Doing work' • Transferring energy through radiation and • particles • Preventing energy transfers	Graphing skills, rearrangement of formulae	Students to relate thermal imaging and measurement to households and sports. Students to learn social skills and teamwork through practical work.
		Breathing • How we breathe • The damage caused by smoking, drinking • alcohol and taking drugs	Investigation skills, drawing and interpreting biological diagrams	Students to learn about the impact of drug and alcohol misuse and why pregnant people should not drink. Students to learn about the impact of recreational drugs and their legality and the impact of addiction and withdrawal on those surrounding the addicted person. Students to learn about the impact of smoking on peoples' health. They will explore the effects of passive smoking and how this effects people who do not smoke.
		Elements • Elements, atoms and compounds • Chemical formulae • Polymers	Balancing equation skills	Students to learn about atoms and are encouraged to think of the vast scale of atoms in the structure of various items (i.e. diamonds) Students to learn about the impact of Poly(ethane) and why we use it in society, as a convenience product and as a medical product.
Autumn 2	**Test 2:** 20 marks: Recall questions on energy, breathing and elements, contact forces and digestion. 30 marks: Application questions on contact forces and digestion. **Revision materials:** Contact forces: https://www.bbc.co.uk/bitesize/topics/z4brd2p Digestion: https://www.bbc.co.uk/bitesize/topics/zf339j6	**Contact forces** • Friction and drag • Squashing and stretching • Turning forces	Interpreting force arrows and determining resultant force. Using and rearranging formulae.	Evaluate the safety of objects which stretch or turn using equations and laws.
		Digestion • How to test foods for different nutrients • What makes and balanced diet • How the body breaks down food to release energy and nutrients	Investigation and observation skills while carrying out food tests	Students to explore the idea of a healthy diet and extrapolate why it is important that all people worldwide should have access to healthy (and enough) food.

Term	Assessment	Topics	Skills	Personal Development
Spring 1	**Test 3:** 20 marks: Recall questions on energy, breathing and elements, contact forces, digestion, evolution and waves. 30 marks: Application questions on evolution and waves. **Revision materials:** Evolution: https://www.bbc.co.uk/bitesize/topics/zpffr82 Waves: https://www.bbc.co.uk/bitesize/topics/zw982hv	**Evolution** • How the organisms that exist today evolved • How scientists are trying to prevent extinctions and preserve biodiversity	Evaluating data to describe population changes	Students to learn about evolution and how theories are made and how humans fit into the natural world. Students to learn about extinction and the impact that the loss of a species can have on a culture, for example, with the Giant Panda and Dodo.
		Waves • What affects the energy that waves transfer • How waves interact with the surfaces they hit and what matter they can travel through • Ultrasound and its uses • How waves can cause damage on a large scale and to the human body	Investigation skills and interpreting data	Students to learn about the uses of waves in society from ultrasound to visible light. Students to also analyse the effect of ionising radiation of citizens, who is the most at risk of UV radiation and ways to prevent malignancy. Students to learn about how we use sound and ultrasound in entertainment and in medicine.
Spring 2	**Test 4:** 20 marks: Recall questions on energy, breathing and elements, contact forces, digestion, evolution, waves, periodic table, inheritance and pressure. 30 marks: Application questions on the periodic table, inheritance and pressure. **Revision materials:** Periodic table: https://www.bbc.co.uk/bitesize/topics/zv9nhcw Inheritance: https://www.bbc.co.uk/bitesize/topics/zpffr82 Pressure: https://www.bbc.co.uk/bitesize/topics/z4brd2p	**Periodic table** • How elements are classified • The patterns of physical and chemical properties in the periodic table	Investigation and observation skills, interpreting data from tables and graphs	Students to learn about the Periodic Table and its structure and how to use predications of data to mould a theory.
		Inheritance • How characteristics are inherited through • genetic material • How genetic materials in some organisms can be modified	Using punnett squares	Students to learn about genetic modification of plants, why they are modified and explore why people are for and against genetic modification.
		Pressure • Pressure in fluids (gases and liquids) • Why some objects float and some sink • The pressure of one solid object on another solid object	Evaluating force arrows to determine the effect on objects, using and rearranging formulae	Students should consider pressure changes in fluids in terms of safety when scuba diving.

Term	Assessment	Topics	Skills	Personal Development
Summer 1	**Test 5:** 20 marks: Recall questions on energy, breathing and elements, contact forces, digestion, evolution, waves, climate and the Earth's resources, periodic table, inheritance, pressure and types of reaction and chemical energy, climate and the Earth's resources. 30 marks: Application questions on types of reaction and chemical energy and climate and the Earth's resources. **Revision materials:** Types of reaction and chemical energy: https://www.bbc.co.uk/bitesize/topics/zypsgk7 Climate and the Earth's resources: https://www.bbc.co.uk/bitesize/topics/z3fv4wx	**Types of reaction and chemical energy** • What happens to atoms in chemical • reactions • Combustion • Decomposition • Conservation of mass in chemical reactions • How chemical reactions transfer energy • Why chemical reactions are important	Investigation skills, including collecting and interpreting data to determine the type of reaction	Students to consider how they can use their experiences of reactions can define the type of reaction. Students to learn about thermal decomposition and consider why different compounds have different levels of reaction.
		Climate and the Earth's resources • How we extract metals from the Earth • What we can do to prevent vital resources from running out • Composition of the atmosphere • Causes and effects of global warming	Interpreting long term trends in data and the difference between correlation and causation.	Students to learn about the Carbon Cycle and how all carbon is cycled throughout the world, for millennia, and how life and death contribute to this cycle. Students to learn about global warming and the responsibilities of communities, countries and the global community to prevent further increases where possible, including the IPCC. Students to learn about the impact of quarrying materials, both negative and positive. Students to learn about the importance of recycling and why we should all recycle, both globally and as citizens of a seaside town, where out pollution may enter the marine ecosystem.
Summer 2	**Test 6:** 20 marks: Recall questions on energy, breathing and elements, contact forces, digestion, evolution, waves, climate and the Earth's resources, periodic table, inheritance, pressure, types of reaction and chemical energy, respiration and photosynthesis and magnetism and electromagnetism. 30 marks: Application questions on respiration and photosynthesis and magnetism and electromagnetism. **Revision materials:** Respiration and photosynthesis: https://www.bbc.co.uk/bitesize/topics/zvrrd2p Magnetism and electromagnetism: https://www.bbc.co.uk/bitesize/topics/z4brd2p https://www.bbc.co.uk/bitesize/topics/zrvbkqt	**Respiration and photosynthesis** • How the body transfers energy from food so it can be used for movement, growth and repair by the process of respiration • How anaerobic respiration in microorganisms can be used to make products like bread and beer • How plants produce food by the process of photosynthesis • Structure of a leaf • Why minerals are required for healthy plant growth	Balancing equation skills Drawing and labelling biological diagrams	Students to learn about respiration and being fit and healthy – exploring ways in which lifestyle can affect health. Students to learn about the factors that affect photosynthesis and how this impacts farming practices, to maximise yield, to feed the world. Students to recognise the usage of fertilisers and the potential impact on the surrounding ecosystems. Students to explore the use of NPK fertilisers and how farming communities are using these to increase yields to feed more people as communities grow.
		Magnetism and Electromagnetism • How to make a magnet using electricity • How to make electromagnets stronger • How electromagnetic devices like bells and • loudspeakers work • Modelling magnetic fields • The Earth's magnetic field	Drawing scientific diagrams of magnetic fields to show their effects on objects	Students to learn about the Earth's magnetic field and think about how the world depends on magnetism for uses like compasses. Students to think about the implication of the poles flipping at any time.

Year 9

Term	Assessments	Topics	Skills	Personal Development
Autumn 1	**Tests:** One test over the course of the term One 45 mark test at the end of each topic listed below: B1 Cell Structure and Transport & B2 Cell Division https://www.bbc.co.uk/bitesize/topics/z2mttv4 https://www.bbc.co.uk/bitesize/topics/z2mttv4	**B1 Cell Structure and Transport** Microscopes, Animal and Plant cells, Eukaryotic and Prokaryotic cells, Specialised Animal and Plant cells, Diffusion and Osmosis, Osmosis in Plants, Active Transport and Exchanging Materials	Use of standard form and orders of magnitude Calculating surface area to volume ratios	The importance of cell specialisation to multicellular life.
		B2 Cell Division Cell Division, Growth and Differentiation, Stem Cells and the Ethics Surrounding Them	Practical and modelling skills	Stem cell therapy and the ethical arguments over the use of stem cells.
Autumn 2	**Tests:** Two tests over the course of the term One 45 mark test at the end of each topic listed below: C1 Atomic Structure: https://www.bbc.co.uk/bitesize/topics/zcckk2p P6 Molecules and Matter: https://www.bbc.co.uk/bitesize/topics/z3ybb82	**C1 Atomic Structure** Atoms, Chemical Equations, Separating Mixtures, Basic Distillation & Chromatography, History of the Atom, Ions, Atoms and Isotopes, Electronic Structure.	Balancing equations Practical skills Calculating mass and atomic number	History of the Structure of the Atom and how our ideas have changed over time. How new ideas are created and proved in science and how they could go about doing the same.
		P6 Molecules and Matter Density, States of Matter, Changes of State, Internal Energy, Specific Latent Heat, Gas Pressure and Temperature	Using and rearranging formulae Following and writing methods	

Term	Assessments	Topics	Skills	Personal Development
Spring 1	**Tests:** One test over the course of the term One 45 mark test at the end of each topic listed below: B4 Organising Animals and Plants: https://www.bbc.co.uk/bitesize/topics/zwj22nb	**B4 Organising Animals and Plants** Blood and Blood Vessels, The Heart and Helping the Heart stay Healthy, Breathing and Gas Exchange, Tissues and Organs in Plants, Transport Systems in Plants, Evaporation and Transpiration, Factors affecting Transpiration	Dissecting, drawing and labelling biological diagrams	Ethics surrounding heart transplants and weighing up the benefits and risks of different treatments for heart disease. The use of animals and their organs for Science, e.g. dissection, and how to treat them with respect.
Spring 2	**Tests:** Two tests over the course of the term One 45 mark test at the end of each topic listed below: C2 The Periodic Table: https://www.bbc.co.uk/bitesize/topics/zcckk2p P7 Radioactivity: https://www.bbc.co.uk/bitesize/topics/zshssrd	**C2 The Periodic Table** Development of the Periodic Table, Electronic Structures and the Periodic Table, Group 1: The Alkali Metals, Group 7: The Halogens, Explaining Trends in the Periodic Table	Practical skills: e.g. displacement reactions Analysing trends	The development of scientific ideas over time.
		P7 Radioactivity Atoms and Radiation, The Discovery of the Nucleus, Changes in the Nucleus, Alpha, Beta and Gamma Radiation, Activity and Half Life	Nuclear equations Calculation of half life and graph skills	History of the Structure of the Atom and how our ideas have changed over time. How new ideas are created and proved in science and how they could go about doing the same. Nuclear Power Stations and whether it is right or wrong to use them. Hazards and uses of radiation on the body and how to use sources safely, opportunities for discussion of the effects of radiation e.g. from Chernobyl or the atomic bomb and their effects on societies.

Term	Assessments	Topics	Skills	Personal Development
Summer 1	**Tests:** Two tests over the course of the term One 45 mark test at the end of each topic listed below: B7 Non-Communicable Diseases: https://www.bbc.co.uk/bitesize/guides/z9dhjty/revision/1	**B7 Non-Communicable Diseases** Non-Communicable Diseases, Cancer, Smoking and the Risk of Disease, Diet, Exercise and Disease, Alcohol and Other Carcinogens	Interpreting data to look for correlation and causation	How to maintain healthy eating and the links between a poor diet and health risks, including cancer. The facts about the harms from smoking tobacco (particularly the risk to lung cancer), the benefits of quitting and how to access support to do so.
Summer 2	**Tests:** One test over the course of the term One 45 mark test at the end of each topic listed below: P3 Energy Resources: https://www.bbc.co.uk/bitesize/guides/z2wfxfr/revision/1	**P3 Energy Resources** Energy Demands, Energy from Wind and Water, Power from the Sun and Earth, Energy & the Environment, Big Energy Issues	Using comparative language, evaluating data	The advantages and disadvantages of different renewable and non-renewable sources, including their effects on the environment. This may lead to them making informed decisions later / discussing with parents when choosing energy providers.