

Long Term Plan Science

Rationale:

As we are not a permanent provision and many of our pupils have missed education or are low academically, we cannot cover the full curriculum that is covered by mainstream schools. This curriculum is designed to cover base core knowledge and gap fill, so when pupils move back into their next school/provision they have key skills and knowledge. Those pupils who are with us for a slightly extended time, particularly in Year 10 and Year 11, the aim is to fill gaps from previous years and support our pupils in gaining a qualification in science.

KS3- The first term of each cycle (blue/green) will be based on the gaps in knowledge and skills identified in the KS3 baseline assessment completed in the summer term in addition to investigatory skills needed to complete the KS3 curriculum (see 14 steps tracker). AQA suggests the KS3 curriculum is spread over 2 years, so this has generated the blue/green cycle. AQA KS3 curriculum builds the foundations to be able to access the ELC qualification. -Use the specification document & AQA unit award criteria for further guidance on content/planning.

Y10- Year 10 will complete the AQA ELC qualification over the academic year (AQA allocate an academic year to complete). By the end of Year 10, each pupil will have gained an entry level certificate. The content of the ELC feeds into the GCSE content so creates a solid foundation for Year 11. -Use the specification document for further guidance on content/planning.

Y11- The Year 11 content builds on the ELC qualification completed by year 10 and coverage is similar. Year 11 is used for revising and embedded key knowledge (repeated learning strategy) which will adapt to each year group based on their Year 10 outcome (26/27 Year 11 cohort will not have completed the Year 10 ELC so they will need more in-depth coverage of content). -Use the specification document for further guidance on content/planning.

This LTP should be used in conjunction with AQA documents for future details of outcomes and coverage.

NEED TO DOUBLE CHECK AND LOOK INTO REQUIRED PRACTICALS- these do not get sent off or contribute in GCSE but must be covered? Double check TDA in ELC qualifications.

Year	Autumn 1 (7 weeks = 21 lessons)	Autumn 2 (7 weeks = 21 lessons)	Spring 1 (6 weeks = 18 lessons)	Spring 2 (5 weeks = 15 lessons)	Summer 1 (7 weeks = 21 lessons)	Summer 2 (7 weeks = 21 lessons)
KS3 Green (academic Year 27- 28)	This will be completed once the summer 2027 KS2 assessment has taken place. It will cover gaps in knowledge and core investigatory skills outlined in the 14 step tracker. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.	Forces <u>Gravity</u> 1. Introduction to gravity 2. Marble run investigation 3. Weight and gravity 4. Gravity and space <u>Speed</u> 5. Speed effect on time taken 6. Calculating speed, distance and time 7. Investigating speed 8. Distance time graphs Electromagnetics <u>Voltage and resistance</u> 9. Understanding and measuring voltage 10. Resistance 11. Impact of voltage and resistance on current 12. Safety <u>Current</u> 13. Circuit diagrams	Ecosystem <u>Interdependence</u> 1. Food chains & ecosystems 2. Food webs & interdependence 3. Population change effects 4. Human impacts on food webs <u>Plant reproduction</u> 5. Parts of a flower & functions 6. Pollination and fertilisation 7. Seed dispersal 8. Plant survival Matter <u>Particle model</u> 9. The particle model 10. Changes of state 11. Diffusion and gas pressure 12. Applying the particle model	Reactions <u>Metals and non-metals</u> 1. Properties of metals and non-metals 2. Metals, oxygen and oxidation 3. Metals and acids 4. Reactivity series <u>Acids and alkalis</u> 5. pH scale 6. Neutralisation 7. Everyday neutralisation 8. Indigestion remedy investigation 9-11: Investigation 12-15: Catch up, consolidation and assessment Unit award references: • 123202 Properties of metals and non-metals • 70355 Science: Acids and Alkalis	Organisms <u>Movement</u> 1. The skeleton 2. Skeleton as a system 3. Muscles and movement 4. Movement, injury and enhancement <u>Cells</u> 5. Human cells 6. Plant cells 7. Observing and comparing cells 8. Specialised cells and adaptations Earth <u>Earth Structure</u> 9. Layers of the earth 10. Rock formation 11. Rocks over time 12. The solar system (how it works) 13. Days and seasons 14. How big is universe?	Waves <u>Sound</u> 1. What is sound 2. Loudness, amplitude and volume 3. Pitch and frequency 4. Oscilloscope traces <u>Light</u> 5. Reflection of light 6. Mirrors and image formation 7. Refraction through transparent materials 8. Lenses and vision Genes <u>Variation</u> 9. Understanding variation 10. Inherited and environmental 11. Variation and survival 12. Environmental change predictions <u>Human reproduction</u>

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	19. 20. 21.	14. Series and parallel circuits 15. Charged objects 16. Charged objects continued 17-21: gap filling, consolidation and assessments Unit award references: 118604 Making a marble run to learn about forces and gravity. 113874 Gravity and space 113601 Investigating speed 119057 Current and electricity: Voltage and resistance 119056 Current and electricity: series and parallel	<u>Separating mixtures</u> 13.Pure substances, mixtures and solutions 14.Filtration and evaporation 15.Distillation and chromatography 16. Choosing the best separation method 17- 18: Catch up, consolidation, gap filling Unit award references: 72671 Introduction to food chains and food webs 113623 Reproduction in flowering plants 120431 Sorting out: Separating mixtures		Unit award references: 125676 An introduction to the muscular system 87888 Animal and plant cells 111715 The solar system	13. Female reproductive system 14. Male productive system 15. Menstruation 16. Fertilisation 17. Gestation Lessons 18-21 catch up, assessments and consolidation Unit award references: 70357 Science: Sound and light 110438 Human reproduction
KS3 Blue (academic Year 26-27)	This based on the KS2 science assessments taken in Summer 26. This term covers gaps in KS2 knowledge and the investigatory skills in the 14 step tracker. Electricity 1.Construct and draw series circuits 2.Complete and incomplete circuits 3.Variations within circuits 4. Plan- Voltage experiment 5.Investigate- Voltage experiment 6.Evaluate- Voltage experiment	Forces <u>Contact forces</u> 1. Forces and equilibrium 2. Forces and changing shape 3. Force and stretching relationships 4. Friction investigation <u>Pressure</u> 5. Understanding pressure in fluids 6. Upthrust, floating and sinking 7. Pressure, stress and surface area 8. Calculating pressure and stress Electromagnetics	Waves <u>Wave effects</u> 1. Introduction to waves 2. Sound waves and hearing 3. Light waves and living things 4. Using waves in everyday life <u>Wave properties</u> 5. Describing waves 6. Comparing sound and light waves 7. Reflection, absorption and transmission 8. Combining waves and wave behaviour Matter	Earth <u>Climate</u> 1. The carbon cycle 2. Greenhouse gases and global warming 3. Human impacts on the carbon cycle 4. Clime change and reducing emissions <u>Earth resources</u> 7. Natural resources, minerals and ores 8. Extracting metals 9. Recycling and sustainability 10. Choosing the best method	Organisms <u>Breathing</u> 1. The gas exchange 2. How breathing works 3. Exercise, smoking and asthma 4. Investigation- Is height linked to lung volume? Digestion 5. Nutrients and a balanced diet 6. Structure of the digestive system 7. How digestion happens 8. Diet, digestion and health Reactions <u>Chemical energy</u>	Ecosystem <u>Respiration</u> 1. What is respiration 2. Aerobic and anaerobic respiration 3. Fermentation in yeast 4. Investigating fermentation with yeast <u>Photosynthesis</u> 5. Introduction to photosynthesis 6. Plant adaptations for photosynthesis 7. Factors affecting photosynthesis

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	Living things and their habitats 7. Conditions for life 8. Group organisms 9. Classify animals 10. Classify plants 11. Microorganisms 12. Classify microorganisms The circulatory system 13. The circulatory system 14. Blood 15. The heart 16. Blood flow in the heart 17. Oxygenated and deoxygenated blood 18. Dissection of the heart Lessons 19-21 for catch up, assessments or creating their own investigation. Unit award references: • 760073 Introduction to simple electrical circuits • 111722 Living things and their habitats • 124395 An introduction to the blood and the circulatory system	<u>Electromagnetics</u> 9. Understand voltage 10. Voltage in series and parallel circuits 11. Resistance in materials 12. Measuring and calculating resistance <u>Magnetism</u> 13. Introduction to magnets 14. Magnetic fields 15. Electromagnets and their uses 16. Earth's magnetic field Lessons 17-21 allowance for extension, assessment and autumn term events. Unit award references: • 71464 Science: Friction • 93848 Science: Introduction to floating and sinking • 128207 Investigating magnetic fields	<u>Periodic table</u> 9. Introducing the periodic table 10. Exploring groups in the periodic table 11. Patterns and trends in the periodic table 12. Using the periodic table to make predictions <u>Elements</u> 13. Elements, atoms and compounds 14. Elements, compounds and mixtures 15. Naming compounds and using formulae 16. Properties of elements and compounds Unit award references: • 119028 Waves • 113862 Science: The periodic table	11-15- Recycling/climate change project (giving back to the community). Unit award references: • 124288 Introduction to climate change	9. Energy changes in chemical reactions 10. Exothermic reactions 11. Endothermic reactions 12. Applications of energy changes <u>Types of reactions</u> 13. Chemical and physical changes 14. Types of reaction 15. Conservation of mass 16. Applying and conservation of mass Lessons 19-21 for catch up, assessments or extending learning. Unit award references: • 83007 Science: Lungs and health • 90978 Structure of the human digestive system	8-9 Investigation- Is light needed for photosynthesis? Genes <u>Evolution</u> 10. Extinction and biodiversity 11. Natural select and its affects. 12. How can we use evidence to explain extinction 13. Which theory best explains extinction of species? <u>Inheritance</u> 14. Inherited characteristics 15. DNA, genes and chromosomes 16. Models of inheritance and variation 17. Human intervention in genetics (debate) 18-21 catch up, consolidation, assessments and end of term events. Unit award references: • 86933 Photosynthesis • 112006 Introduction to evolution and inheritance
Y10 (ELC)	Biology: The human body <u>Outcome 1: Cells</u> 1. Human cells 2. Plant cells <u>Outcome 2: Tissues</u> 3. Ordering cells, tissue, organise and systems by size and comparing.	Chemistry: Elements, mixtures and compounds <u>Outcome 1: Substances are made of atoms</u> 1. Atoms and elements <u>Outcome 2: Elements forming compounds</u>	Physics: Energy, forces and the structure of matter <u>Outcome 1: Energy storage</u> 1. Kinetic & gravitational potential 2. Thermal and elastic potential <u>Outcome 2: Energy transfer</u> 3. Rate of cooling (TDA)	Biology: Environment, evolution and inheritance N.B. TDA on plant growth set up at the start of term. <u>Outcome 1: Radiation from the sun</u> 1. Photosynthesis <u>Outcome 2: Animal & plant adaptations</u>	Chemistry: Chemistry in our world <u>Outcome 1: Acids and metals</u> 1. Acids and metals 2. Hydrogen test <u>Outcome 2: Acids and alkalis</u>	Physics: Electricity, magnetism and waves <u>Outcome 1: Electrical current</u> 1. Measuring current 2. Volts and potential difference 3. Resistance (TDA)

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4. Identifying major organs and the functions of organ systems. <u>Outcome 3: Digestive system</u> 5. Position of organs and order in the digestive system. 6. Enzymes <u>Outcome 4: Respiration</u> 7. Respiration and the equation. 8. Effects of exercise and healthy diet (TDA) <u>Outcome 5: Communicable diseases</u> 9. Communicable diseases and pathogens <u>Outcome 6: White blood cells</u> 10. White blood cells and vaccinations <u>Outcome 7: Medical drugs</u> 11. Medical drugs and antibiotics <u>Outcome 8: Automatic control systems</u> 12. Automatic control systems and chemical responses. 13. Reflex actions (TDA) <u>Outcome 9: Hormones</u> 14. Types of hormones and glands 15. Menstrual cycle <u>Outcome 10: Hormones controlling fertility</u> 16. Contraceptives and fertility	2. Elements & compounds (formation and naming common) 3. Word equations <u>Outcome 3: States of matter</u> 4. Three states of matter and their models 5. Melting points (TDA) 6. Changing of state <u>Outcome 4: Carbon structures</u> 7. Properties and structures of carbon <u>Outcome 5: Mixtures and separations</u> 8. Filtration (TDA) 9. Crystallisation <u>Outcome 6: Paper chromatography</u> 10. Investigation different colours in ink and food colouring (TDA) <u>Outcome 7: Unreactive metals</u> 11. Unreactive metals 12. Recycling metals and limiting environmental impact <u>Outcome 8: Properties of metals</u> 13. Structure and bonds 14. Conductors 15. Aluminium <u>Outcome 9: Alloys and steels</u> 16. Alloys 17. Steels <u>Outcome 10: Polymers</u> 18. What are polymers 19. Properties of polymers	4. Thermal conductivity (TDA) <u>Outcome 3: Energy sources on Earth</u> 5. Types of energy source (e.g. fossil fuels, hydro) 6. Renewable and non-renewable <u>Outcome 4: Contact forces</u> 7. Contact forces 8. Non-contact forces <u>Outcome 5: Work done</u> 9. Work done- distance 10. Work done- frictional forces (rise in temp) <u>Outcome 6: Speed</u> 11. Speed calculations 12. Speed changes down a slope (TDA). <u>Outcome 7: Stopping distance</u> 13. Stopping distance (thinking & breaking) <u>Outcome 8: Reaction times (stopping)</u> 14. Effects on human reactions (stopping distance) <u>Outcome 9: Breaking distance</u> 15. External effects (weather conditions) <u>Outcome 10: Atoms and nuclear radiation</u> 16. Nuclear radiation 17. Types of radiation 18. Catch up and assessment	2. Adaptations to survive <u>Outcome 3: Food chains</u> 3. Food chains 4. Food webs and impact on ecosystems <u>Outcome 4: Decay and recycle</u> 5. Decay and recycle <u>Outcome 5: Plant growth/competition</u> 6. Plant growth/competition (TDA) <u>Outcome 6: Living and non-living factors on animals & plants</u> 7. Environmental impact on animals and plants <u>Outcome 7: Pollution</u> 8. Types and causes of pollution <u>Outcome 8: Darwin's theory of evolution</u> 9. Darwin's theory of evolution <u>Outcome 9: Reproduction</u> 10. Sexual reproduction 11. Asexual reproduction <u>Outcome 10: DNA</u> 12. DNA 13. Chromosomes 14-15 gap filling, consolidation and assessment	3. Neutralising acids with alkalis 4. Acids producing salts <u>Outcome 3: Energy transfers in reactions</u> 5. Temperature increases 6. Temperature decreases <u>Outcome 4: Rate of chemical reaction (TDA)</u> 7-8 Investigate how to make a chemical reaction go faster <u>Outcome 5: The early atmosphere</u> 9. Volcanic activity 10. algae, plants and photosynthesis <u>Outcome 6: Fossil fuels</u> 11. Carbon and fossil fuels 12. Earths atmosphere <u>Outcome 7: Crude oil</u> 13. Crude oil 14. Separation of crude oil <u>Outcome 8: Burning fossil fuels</u> 15. Burning fossil fuels 16. Environmental impacts <u>Outcome 9: Greenhouse gases</u> 17. Human activity 18. Impact on the atmosphere <u>Outcome 10: Water</u> 19. Safe drinking water (potential TDA) Lessons 20-21- assessment and catch up	<u>Outcome 2: d.c. and a.c. current</u> 4. D.C. current (cells and batteries) 5. Alternating current <u>Outcome 3 & 4: Domestic electricity</u> 6. Plugs, fuses and wires 7. Electrical appliances <u>Outcome 5: Magnetic poles</u> 8. Poles and attraction <u>Outcome 6:</u> 9-10. TDA factors that affect strength of an electromagnet <u>Outcome 7: Types of waves</u> 11. Transverse 12. Longitudinal <u>Outcome 8: wavelength</u> 13. amplitude <u>Outcome 9:</u> Electromagnetic waves 14. Electromagnetic waves 15. Wavelength groups 16. Hazards of waves <u>Outcome 10: Practical applications (waves)</u> 17. Practical applications of waves 18-21 catch up, assessments and consolidation
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	17. Evaluate the use of hormones to control fertility 18-21: Gap filling, consolidation and assessments					
Y11 (AQA combined trilogy)	Biology <u>Cell biology</u> 1. Human & plant cells 2. Prokaryotic cells 3. Transport in cells <u>Organisation</u> 4. Digestive system 5. Respiration system 6. Circulatory system 7. The heart & blood vessels Chemistry <u>Atomic structure & periodic table</u> 8. Atoms, elements and compounds 9. Charge & mass of an atom 10. The periodic table 11. Groups <u>Bonding, structure and property of matter</u> 12. Chemical bonds 13. Ionic bonding and compounds 14. Covalent bonding Physics <u>Energy</u> 15. Energy stores and systems 16. Changes in energy 17. Power 18. National and global energy resources <u>Electricity</u> 19. Circuit symbols and diagrams	Biology <u>Infection & response</u> 1. Communicable diseases 2. Non-communicable diseases 3. Human defence systems and vaccinations <u>Biogenetics</u> 4. Practical- Photosynthesis & rates 5. aerobic & anaerobic respiration 6. Response to exercise 7. Metabolism Chemistry <u>Chemical changes</u> 8. Reactivity of metals 9. Reactions of acids 10. pH scale and neutralisation 11. Electrolysis <u>Energy changes</u> 12. Exothermic and endothermic reactions 13. Calculating rates of reactions 14. Collision theory and catalysts Physics <u>Particle model of matter</u> 15. Changes of state 16. Internal energy 17. Particle motion in gas <u>Atomic structure</u> 18. Structure of an atom	Biology <u>Homeostasis & response</u> 1. Homeostasis 2. Human nervous system 3. Practical- human reaction time 4. Hormonal coordination <u>Inheritance, variation and evolution (part 1)</u> 5. Sexual & asexual reproduction 6. DNA & genome Chemistry <u>Organic chemistry</u> 7. Alkanes 8. Distillation 9. Properties of hydrocarbons 10. Cracking and alkenes <u>Chemical analysis</u> 11. Pure substances 12. Formulations Physics <u>Forces</u> 13. Gravity 14. Resultant forces 15. Elasticity <u>Waves</u> 16. Transverse and longitudinal waves 17. Electromagnetic waves 18. Properties and uses of electromagnetic waves	Biology <u>Inheritance, variation and evolution (part 2)</u> 1. Genetic inheritance 2. Inherited disorders 3. Evolution <u>Ecology</u> 4. Adaptations 5. Organisation of an ecosystem Chemistry <u>Chemistry of the atmosphere</u> 6. Proportions of gases in the atmosphere 7. Increasing oxygen 8. Greenhouse gases 9. Global climate change 10. Carbon footprint Physics <u>Magnetism and electromagnetism</u> 11. Poles of a magnet 12. Magnetic fields 13. Electromagnetism 14-15 catch up, assessment and consolidation	GCSE Revision and exams Gap filling, practical, exam paper familiarisation and revision based on the assessment of pupils throughout Year 11 and their needs.	GCSE Revision and exams Gap filling, practical, exam paper familiarisation and revision based on the assessment of pupils throughout Year 11 and their needs.

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	20.Current & resistors 21.Mains electricity	19. Mass number, atomic number and isotopes 20. Radioactive and nuclear				
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Half Termly Career Focus

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Green	Laboratory technician	Aerospace engineer Astronomer	Sound and lighting technician	Geologist	Physiotherapist	Conversation biologist
Blue	Electrician	Mechanical engineer	Materials scientist	Environmental scientist Recycling and waste management officer	Respiratory therapist	Wildlife conservation officer
Y10	Biomedical scientist	Chemist	Energy engineer Renewable energy technician	Ecologist	Environmental chemist	Electrical engineer
Y11	Medical research scientist	Clinical microbiologist	Forensic scientist	Climate scientist	Science teacher Pharmacist	Science Technician

Science assessments

Year group	
KS3	14 step tracker: - Thinking scientifically - Understanding applications and implications of science - Communication and collaborating in science - Using investigative approaches - Working critically with evidence Rationale: Building up core scientific skills Qualification: AQA unit award scheme
Y10	ELC criteria for Entry level 1, 2, 3 Rationale: Pupils will be able to gain an accredited qualification which will lead onto GCSE content. Qualification: AQA Entry level (1, 2, or 3) in science
Y11	ELC criteria continued (progression through the levels)

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	GCSE grading criteria/predictions Rationale: track progress using the previously used ELC as the content links and assessing against GCSE to inform grade predictions. Qualifications: GCSE Combined Science Trilogy (foundation)
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