CAISTOR YARBOROUGH ACADEMY

Curriculum Overview – Key Stage 3 Science

	7	8	9
Autumn	**Cycle 0** - What is science? - Lab Equipment - Lab Safety - Safety poster competition - Measuring - Lab safety review - Drawing equipment **Cycle 1:** **Cells, tissues, systems, and organisms** - Life processes - Organs - Plant and animal cells - Plant structure and organs - Organ systems **Mixtures and separation** - Investigating saturated solutions - Filtration - Crystallisation	**Cycle 1** **Plants & reproduction** - 5 Kingdoms - Plant structures - Sexual reproduction - Asexual reproduction - Pollination - Seeds **Metals and their uses** - Properties of metals - Chemical reactions of metals - Reactivity series - Corrosion - Displacement reactions - Chemical equations **Energy & Transfers** - Radiation, conduction, convection - Investigating insulation - Power and efficiency	**Cycle 1:** **Cells and specialised cells** - Microscopes - Plant and animal cells - Microscopes – core practical - Specialised cells - Inside bacteria - Standard form **Atoms, isotopes, ions** - Atoms - Isotopes - RFM - RAM - Percentage by mass - Ions **Speed and motion** - Vectors and scalars - Speed, distance, time - Distance/time graphs - Displacement/ time graphs - Acceleration

	- Chromatography - Distillation **Particle model** - Solids, Liquids & gases - State Changes - Particle theory - Diffusion - Pressure **End of Cycle Exam** **<u>Cycle 2:</u>** **The human body** - Human body - Breathing and gas exchange - The circulatory system & blood - Investigating pulse - The skeleton - Muscles & drugs **Acids and Alkalis** - pH scale - Indicators - Neutralisation - Chemical equations - Investigating concentration - Making a salt **Energy** - Types of energy - Energy transfers - Investigating energy in food - Fossil fuels - Renewable energy - Energy Efficiency **End of Cycle Exam**	- Domestic fuels – uses and costs - Eco homes – research **End of Cycle Exam** **<u>Cycle 2:</u>** **Breathing and respiration** - Respiratory system - Gas exchange - Aerobic respiration - Anaerobic respiration - Structure of the heart **Atoms, elements, compounds** - Atoms - Molecules - Chemical reactions - Elements, compounds, mixtures - Balancing equations - -Protons, electrons, neutrons - **Fluids** - States of matter - State changes - Pressure in fluids - Investigating melting points - Heating curves - Investigating density **End of Cycle Exam**	- Acceleration equations - Velocity/time graphs **End of Cycle Exam** **<u>Cycle 2:</u>** **Enzymes** - Enzymes and nutrition - Enzyme action (Lock and key) - Enzyme activity - Factors that affect enzyme activity - Factors that affect enzyme action – core practical **Particles** - State changes - Cooling curve experiment - Describing cooling curves - Pure and impure - Ions and skills recap **Forces and motion** - Newtons first law - Mass and weight - Newtons second law - Newtons third law - Investigating acceleration - Simple machines- levers, pulleys and gears - **End of Cycle Exam**

January exam (Including cycle one and 2)			
Spring	**Cycle 3:** **Ecosystems** - Animal kingdoms - Habitats - Investigating variation - Adaptations - Food chains and webs - Biotic and abiotic factors **Atoms and elements** - Elements and the periodic table - Elements, compounds, and mixtures - Making compounds - Metals and non-metals - Chemical reactions - Investigating temperature changes **Current and electricity** - Circuit diagrams - Measuring current - Series and parallel circuits - Voltage - Models of electricity	**Cycle 3:** **Unicellular organisms** - Animal, plant, and bacterial cells - Investigating diffusion - Pathogen research (IT) - Pathogens - Aseptic technique - Bacteria - Investigating antibiotics - Useful Bacteria **Reactivity series** - Chemical formulas - Reactivity series of metals and displacement reactions - Halogens and reactivity - Rusting experiment - Reduction and oxidation - Exothermic and endothermic reactions - Fermentation **Force Fields and magnets**	**Cycle 3:** **Nutrition** - Nutrition - Food tests - Burning food - calorimeter - Diffusion and osmosis - Osmosis – core practical - Active transport **Separation techniques** - Filtration - Crystalisation - Chromatography - Simple distillation - Fractional distillation - Drinking water - Separation challenge **Motion** - Recap newtons laws - Stopping and braking distances - Road safety – IT - Work done - Breaking distances and energy - Kinetic energy - Crash hazards **End of Cycle Exam** **Cycle 4** **Cell division**

	- Resistance - Electrical safety and how is electricity made? **End of Cycle Exam** **<u>Cycle 4</u>** **Sexual reproduction** - Human reproductive organs - Internal and external reproduction - Puberty - The menstrual cycle - Gestation & birth - Abortion debate - **Periodic table** - The atom - Structure of the periodic table - Protons, neutrons & electrons - Drawing electron diagrams - Mendeleev's table - Drawing atoms **Forces** - Forces - Weight and Gravity - Types of forces - Springs - Isaac Newton - Pressure - Friction	- Magnets - Static electricity - -Investigating current in series and parallel - Resistance - Electromagnets **End of cycle test** **<u>Cycle 4</u>** **Plants and growth** - Photosynthesis - Leaf structure - Root hair cells and transpiration - Mineral ions - Plant diseases - Food security - **Chemical tests** - Testing for hydrogen - Testing for Carbon dioxide - Testing for oxygen - Testing for chlorine and ammonia - Flame tests - Halide tests **Earth and space** - The solar system - Planets - Orbits - Seasons - Gravity **End of Cycle Exam**	- Mitosis - Differentiation in stem cells - Specialised cells recap - Animal growth and tumours - Meiosis - Sexual and asexual reproduction **History of the atom and periodic table** - Plum pudding model - Rutherford scattering experiment - Mendeleev's periodic table - Modern periodic table - Drawing molecules - Empirical formula **Energy** - Energy stores and transfers - Efficiency - Keeping warm - Energy stores - Renewable and non- renewable energy - Generating electricity **End of Cycle Exam**

	- Balanced and unbalanced forces. **End of Cycle Exam**		
Summer	**Cycle 5** **Food and nutrition** - Food groups - Balanced diet - Journey of your food - Digestion and absorption - Food tests - Enzymes **Waves** - Types of waves - Sound waves - The ear - Animals and sound - Comparing waves - Uses of sound **Revision for End of year exams**	**Cycle 5** **Bonding Introduction** - Ions - Ionic compounds - Covalent Bonding - Molecules - Metallic bonding - Polymers, ceramics and composites **EM Spectrum** - Longitudinal vs transverse - EM spectrum - Uses & dangers of EM waves - Wave speed calculations - Wave speed practical **Revision for End of year exams**	**Cycle 5** **Groups of the periodic table** - Bonding - Dot and cross diagrams - The noble gases - Alkali metals - Halogens **Waves** - Waves - Waves speed - Reflection - Refraction - Investigating waves – core practical **Revision for End of year exams**
	End of year exams		
	Cycle 6 **Light** - Light and colour - Reflection - Refraction - Refraction practical	**Cycle 6** **Rocks** - Composition of the earth - Structure of the earth - The rock cycle	**Cycle 6** **Diseases and spread** - Threat of disease - Diseases - Testing medicines - Control systems

	- Total internal reflection **Combustion** - Renewable and non-renewable fuels - Oxidation - Investigating fuels - Greenhouse effect and Global warming - Acid rain - Incomplete combustion	- Erosion and weathering - The Carbon cycle - Composition of the atmosphere **Genetics and evolution** - Variation - Inherited variation - DNA - Mitosis - Meiosis - Natural selection	- Ecology and distribution - Containing pandemics **Recap booklet** - Practical and data analysis - Exam technique