The Science Curriculum at Jewellery Quarter Academy

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Key Stage 4 Qualifications and Examination Boards:

AQA GCSE Combined Science Trilogy (8464)

Useful Websites and Links:

https://members.gcsepod.com/podauth/newuser/newpupil?noframe

https://www.youtube.com/channel/UCBgvmal8AR4QIK2e0EfJwaA

https://www.youtube.com/channel/UCqbOeHaAUXw9ll7sBVG3_bw

https://www.senecalearning.com/

https://www.bbc.co.uk/bitesize/examspecs/z8r997h

https://www.aqa.org.uk/subjects/science/gcse/combined-science-trilogy-8464

Knowledge Acquisition Endpoints in English at JQA

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	**All of the year 6 expectations plus….**					
	Acids and Alkalis • **Lab Safety** • **Hazard Symbols** • **Properties of Acids and Alkalis** • **Neutralisation** • **Metals and Acids** **Skills** • Practical skills • Handling Solutions • Risk Assessments • Scientific Drawings • Word Equations • Chemical Formulae	**Cells** • **Plant and Animal Cells** • **Microscopes** • **Cells and Tissues** • **Organs and Organ Systems** • **Skeletons and Muscles** **Forces (Aut 2+ Spr 1)** • **Contact and Non-Contact Forces** • **Resultant Forces** • **Mass and Weight** • **Elasticity** • **Motion- Speed Distance and Time** • **Terminal Velocity** • **Stopping Distances** **Skills** • Using/Rearranging Equations • Correct use of a microscope • Calculating forces • Using force diagrams/Drawing to scale	**Forces** • **Contact and Non-Contact Forces** • **Resultant Forces** • **Mass and Weight** • **Elasticity** • **Motion- Speed Distance and Time** • **Terminal Velocity** • **Stopping Distances**	**Particle Model** • **States of Matter** • **Elements, Mixtures and Compounds** • **Heating and Cooling Curves** • **Separating Mixtures** **Skills** • Graph Skills- Drawing heating and colling curves • Separating techniques (crystalisation, filtration, distillation, chromatography)	**Reproduction** • **Sexual and Asexual Reproduction** • **Human Reproduction** • **Plant Reproduction** • **Puberty** • **Menstrual Cycle** • **Pregnancy** **Skills** • Interpreting graphs (hormones over the menstrual cycle) • Analysing/selecting information from articles about pregnancy • Evaluating best methods of seed dispersal	**Diet and Health** • **Food Groups** • **Food Tests** • **Effects of dietary imbalances** • **Smoking** • **Alcohol Abuse** **Skills** • Analysing the contents of food based on food test data • Interpreting health data regarding dieting trends • Writing to persuade- dangers of smoking/poor diet/alcohol abuse

8	**All of the year 7 expectations plus….**					
	Waves • **Types of waves** • **Light waves** • **Reflection and Refraction** • **Colour** • **The Eye** • **Sound waves** • **The Ear** **Skills** • Measuring Angles of light • Graph Drawing and interpretation • Ray Diagrams • Scaled wave diagrams	**Atoms, Elements and Compounds** • **Elements, Mixtures and Compounds** • **Atomic Structure** • **Periodic Table and Trends** • **Physical and Chemical Changes** • **Conservation of Mass** **Energy** • **Energy Types** • **Energy Transfers** • **Efficiency** • **Conduction** • **Convection** • **Radiation** • **Paying for energy/electricity** • **Renewable/Non-Renewable Resources** **Skills** • Chemical Formulae and Symbol Equations • Balancing Equations • Drawing Electron configuration • Calculating conservation of mass	**Energy** • **Energy Types** • **Energy Transfers** • **Efficiency** • **Conduction** • **Convection** • **Radiation** • **Paying for energy/electricity** • **Renewable/Non-Renewable Resources** **Skills** • Calculating percentage efficiency • Calculating the cost of energy bills • Arguing to persuade: Renewable v Non-Renewable **Photosynthesis, respiration and circulation** • **Photosynthesis** • **Limiting Factors** • **Aerobic and Anaerobic Respiration** • **The Heart** • **Gas exchange systems** **Skills** • Interpreting Graphs • Measuring volumes of gases • Measuring pulse rates	**Chemical Reactions** • **Chemical and Physical Changes** • **Reactivity Series** • **Oxidation and Reduction** • **Exothermic and Endothermic Reactions** **Skills** • Measuring temperature changes • Displacement equations	**Ecosystems** • **Relationships in an ecosystem** • **Species and Hybrids** • **Feeding Relationships** • **Human Impact on the Environment** **Skills** • Interpreting Trends • Drawing Conclusions • Suggesting Improvements to Human Activity	**Earth & Atmosphere** • **History of the Atmosphere** • **The Atmosphere Today** • **The Ozone Layer** • **Greenhouse Effect** • **Climate Change** **Skills** • Interpreting Data • Drawing Conclusions • Predicting Effects on the Environment • Critically Analysing Sources

9	**All of the year 8 expectations plus….**					
	Cell Biology (4.1) • **Cell structure** • **Specialisation of Cells** • **Cell division** • **Transport in plant and animal cells**	**Organisation(4.2)** •**Principles of organisation** •**Cells, Tissues and Organs** •**Animal tissues, organs, and Organ Systems** •**Plant tissues, organs and systems**	**Atomic structure and the periodic table (5.1)** •**Models of the Atom** •**Atom, symbols, RAM, Charge, Isotopes** •**Periodic table** •**Separating Mixture** **Chemical analysis (5.8)** • **Mixtures and Pure Substances** • **Purity, formulations and chromatography** • **Identification of common gases**	**Chemistry of the atmosphere (5.9)** •**The composition and evolution of the Earth's atmosphere** •**Carbon monoxide and methane as greenhouse gases** •**Common atmospheric pollutants and their sources** **Organic Chemistry (5.7)** • **Carbon compounds as fuels and feedstock** • **Fractional distillation** • **Environmental issues with fuels**	**Atomic structure and Radiation (6.4)** •**Models of the Atom** •**Atoms and isotopes** •**Atoms and nuclear radiation** •**Radiation Safety** •**Half Life** **Waves (6.6)** •**Waves in air, fluids and solids** •**Electromagnetic waves** •**Waves and Radiation** **Particle model of matter (6.3)** •**Changes of state and the particle model** •**Internal energy and energy transfer** •**Specific Heat Capacity** •**Particle model and pressure**	**Energy (6.1)** •**Energy changes in a system, and the ways energy is stored before and after such changes** •**Conservation and dissipation of energy** •**Specific Heat Capacity** •**National and global energy resources**
Req. Practicals	Microscopy Osmosis in Plant Tissue	Food tests Enzymes (Amylase)	Chromatography Gas Tests for Carbon Dioxide, Oxygen, Hydrogen and Chlorine		Use of a ripple tank and measuring speed of waves Thermal Radiation using Leslie Cubes Density of materials	Specific heat capacity

10	All of the year 9 expectations plus….					
	Atomic structure (6.4) • Atoms and isotopes • Atoms and nuclear radiation • Radioactive Decay • Half Life • Radiation Safety **Chemical changes (5.4)** • Reactivity of metals • Oxidation and Reduction • Reactions of acids • Making Salts • Electrolysis	**Electricity (6.2)** • Current, potential difference and resistance • Series and parallel circuits • Domestic uses and safety • Energy transfers **Using resources (5.10)** • Using Earth's resources and sustainable development • Making Potable Water Life cycle assessment and recycling	**Homeostasis and response (4.5)** • Homeostasis • The human nervous system • Reflexes • Hormonal coordination in humans • Managing Diabetes • Adrenaline • Negative Feedback **The rate and extent of chemical change (5.6)** • Rate of reaction • Collision Theory • Reversible reactions • Dynamic equilibrium	**Particle model of matter (6.3)** • Changes of state and the particle model • Internal energy and energy transfer • Particle model and pressure **Inheritance, variation and evolution (4.6)** • Reproduction • Variation and evolution The development of understanding of genetics and evolution Classifying Species	**Forces (6.5)** • Forces and their interactions • Work done and energy transfer • Forces and elasticity • Forces and motion • Momentum	**Forces (6.5)** • Forces and their interactions • Work done and energy transfer • Forces and elasticity • Forces and motion • Momentum **Chemistry of the atmosphere (5.9)** • The composition and evolution of the Earth's atmosphere • Carbon monoxide and methane as greenhouse gases • Common atmospheric pollutants and their sources
Req. Practical	**5.4.2.3** Making salts **5.4.3.4** Electrolysis	**6.2.1.3** Resistance **6.2.1.3** IV Characteristics **5.10.1.2** Water purification	**4.5.2.1** Reaction time **5.6.1.2** Rates of reaction	**6.3.1.1** Density		**6.5.3** Force and extension **6.5.4.2** Acceleration

11	**All of the year 10 expectations plus….**					
	Ecology (4.7) •Adaptations, interdependence and competition •Organisation of an ecosystem •Biodiversity and the effect of human interaction on ecosystems **Magnetism and electromagnetism (6.7)** •Permanent and induced magnetism, magnetic forces and fields • The motor effect	**Electricity (6.2)** •Current, potential difference and resistance •Series and parallel circuits •Domestic uses and safety •Energy transfers **Using resources (5.10)** •Using Earth's resources and sustainable development • Life cycle assessment and recycling	**Waves (6.6)** Waves in air, fluids and solids Electromagnetic waves **Chemistry of the atmosphere (5.9)** •The composition and evolution of the Earth's atmosphere •Carbon monoxide and methane as greenhouse gases Common atmospheric pollutants and their sources	**Revision for Summer Exams**	**Revision for Summer Exams**	**Exams**
Req. Practicals	Quadrats and Distribution of Organisms	Resistance IV Characteristics Water purification	Use of a ripple tank and measuring speed of waves Thermal Radiation using Leslie Cubes			