

CURRICULUM MAP: SCIENCE

*“We believe that every one of our students, regardless of background, is entitled to encounter the best that has been thought, said and done through a broad and ambitious curriculum.”*

|                      | TERM 1  | TERM 2   | TERM 3   | TERM 4  | TERM 5   | TERM 6   |
|----------------------|---|--|--|---|--|--|
| <b>Year 11 Units</b> | <b>Topic 2 Organisation</b>   | <b>Topic 5 Homeostasis and Response</b>  | <b>Topic 7 Ecology</b>   | <b>Revision</b>   | <b>Revision Preparing for exams</b>  |  |
| <b>Key concepts</b>  | Diffusion<br>Osmosis<br>Active Transport<br>Digestion<br>Heart<br>Health<br>Plant tissues   | Homeostasis<br>Nervous System<br>Endocrine System<br>Blood/Glucose<br>Fertility Treatment<br>Menstrual Cycle                           | Abiotic and abiotic<br>Adaptation<br>Biodiversity<br>Material Cycles   | Preparing for exams   |  |  |
| <b>Builds on</b>     | Topic 1 Cell Biology  | Topic 2 Organisation   | Topic 4 Bioenergetics  |   |  |  |
| <b>Leads to</b>      | Topic 4 Bioenergetics   |  |  |   |  |  |
| <b>Year 11 Units</b> | <b>Topic 20 Particle Model of Matter</b>  | <b>Topic 19 Electricity</b>  | <b>Topic 24 Magnets and Electromagnets</b>   |   |  |  |
| <b>Key Concepts</b>  | Changes of State<br>Specific Heat Capacity  | Electric circuits<br>Current, Charge and Energy<br>Resistance<br>Power<br>Transferring Energy<br>Electrical Safety<br>Energy Resources | Magnets<br>Electromagnets<br>Transformer<br>Motor effect   |   |  |  |
| <b>Builds on</b>     | Year 8 Chemistry 3  |  |  |   |  |  |
| <b>Leads to</b>      | Topic 21 Atomic Structure<br>Topic 23 Waves   | Topic 24 Magnets and Electromagnets  |  |   |  |  |
| <b>Year 11 Units</b> | <b>Topic 14 Organic Chemistry</b>   | <b>Topic 16 Chemistry of the Atmosphere</b>  | <b>Topic 17 Using Resources</b>  |   |  |  |
| <b>Key Concepts</b>  | Crude Oil<br>Fractional Distillation<br>Cracking  | Atmosphere<br>Evolution of the atmosphere<br>Greenhouse effect and human impact  | Potable water<br>Life cycle assessment<br>Recycling  |   |  |  |
| <b>Builds on</b>     | Topic 8 Atomic structure and Periodic table   | Topic 14 Organic Chemistry   | Topic 16 Chemistry in the atmosphere   |   |  |  |
| <b>Leads to</b>      | Topic 16 Chemistry of the Atmosphere  | Topic 17 Using Resources   |  |   |  |  |
| <b>Year 10 Units</b> | <b>Topic 2 Organisation</b>   | <b>Topic 2 Organisation</b>  |  | <b>Topic 4 Bioenergetics</b>  | <b>Topic 3 Infection and Response</b>  |  |
| <b>Key concepts</b>  | Diffusion<br>Osmosis<br>Active Transport<br>Digestion<br>Heart<br>Health<br>Plant tissues   | Diffusion<br>Osmosis<br>Active Transport<br>Digestion<br>Heart<br>Health<br>Plant tissues  |  | Photosynthesis<br>Respiration   | Communicable and Non-Communicable Disease<br>Defence Systems<br>Vaccination<br>Antibiotics                         |  |
| <b>Builds on</b>     | Topic 1 Cell Biology  | Topic 1 Cell Biology   |  | Topic 2 Organisation  | Ecosystems   |  |
| <b>Leads to</b>      | Topic 4 Bioenergetics   | Topic 4 Bioenergetics  |  | Topic 7 Ecology   | CB9 Ecosystems and material Cycles   |  |
| <b>Year 10 Units</b> | <b>Topic 20 Particle Model<br/>Topic 18 Energy</b>  | <b>Topic 21 Atomic Structure</b>   |  |   | <b>Topic 19 Electricity</b>  | <b>Topic 23 Waves</b>                              |
| <b>Key concepts</b>  | Changes of State<br>Specific Heat Capacity<br>Energy Stores<br>Kinetic Energy<br>GPE<br>Power<br>Efficiency<br>Conservation of energy<br>Energy Resources | Atoms<br>Isotopes<br>Development of atom<br>Radiation<br>Nuclear equations<br>Half Life  |  |   | Electric circuits<br>Current, Charge and Energy<br>Resistance<br>Power<br>Transferring Energy<br>Electrical Safety | Transverse and Longitudinal Waves<br>Wave equation |
| <b>Builds on</b>     | Year 8 Chemistry 3<br>Year 8 Energy   | Topic 20 Particle Model  |  |   | Energy Resources   | Topic 18 Energy                                    |
| <b>Leads to</b>      | Topic 21 Atomic Structure<br>Topic 23 Waves   | Topic 23 Waves   |  |   | Topic 24 Magnets and Electromagnets  | Topic 24 Magnets and Electromagnets                |
| <b>Year 10 Units</b> | <b>Topic 15 Chemical Analysis</b>   | <b>Topic 9 Bonding, properties and matter</b>  | <b>Topic 10 Quantitative Chemistry<br/>Topic 12 Energy Changes</b>   | <b>Topic 11 Chemical Changes</b>  | <b>Topic 13 Rate and Extent of Chemical Change</b>   | <b>Topic 14 Organic Chemistry</b>                  |
| <b>Key concepts</b>  | Chromatography<br>Purity<br>Gas tests   | Ionic<br>Covalent<br>Metallic<br>Allotropes<br>Polymers<br>State Symbols   | Conservation of Mass<br>Relative Formula Mass<br>Moles<br>Amounts of Substances<br>Limiting Reactant<br>Exo and endothermic reactions<br>Reaction profiles | Reactivity of Metals<br>Reactions of Acids<br>Oxidation<br>Electrolysis | Rate of Reaction<br>Collision Theory<br>Reversible Reactions<br>Dynamic Equilibrium                                | Crude Oil<br>Fractional Distillation<br>Cracking   |
| <b>Builds on</b>     | Chemistry 3 year 8  | Chemistry 4  | Chemistry 4  | Chemistry 4   | Topic 8 Atomic Structure and Periodic Table<br>Topic 11 Chemical Changes   | Topic 8 Atomic structure and Periodic table        |
| <b>Leads to</b>      | Topic 11 Chemical Changes   | Topic 10 Quantitative Chemistry  | Topic 8 Atomic Structure and The Periodic Table  | Topic 13 the rate and extent of chemical change                         | Topic 14 Organic Chemistry   | Topic 16 Chemistry of the Atmosphere               |



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|---------------------|--|---|---|--|--|--|
| <b>Year 9 Units</b> |  | <b>DNA and Specialised Cells</b>  |   | <b>Topic 1 Cell Biology</b>  | <b>Topic 2 Organisation</b>  |  |
| <b>Key concepts</b> |  | DNA Structure<br>Variation<br>Inheritance<br>Specialised Cells<br>Diffusion and movement of Cells   |   | Cells<br>Microscopy<br>Mitosis   | Diffusion<br>Osmosis<br>Active Transport<br>Digestion<br>Heart<br>Health<br>Plant tissues  |  |
| <b>Builds on</b>    |  | Crest Award Yr 8 And Ecosystems   |   | Cells and Tissues  | Topic 1 Cell Biology   |  |
| <b>Leads to</b>     |  | Topic 1 Cell Biology  |   | Topic 2 Organisation   | Topic 4 Bioenergetics  |  |
| <b>Year 9 Units</b> | <b>Energy Resources</b>  | <b>Force and Pressure</b>   | <b>Electricity and Electromagnets</b>   | <b>Topic 20 Particle Model</b>   |  | <b>Topic 18 Energy</b>   |
| <b>Key concepts</b> | Energy in fuels<br>Energy in foods<br>Power ratings<br>Energy transfer<br>Domestic bills<br>Renewable and non-renewable resources<br>Efficiency  | Forces<br>Balanced and Unbalanced<br>Changes in Direction<br>Speed<br>Hooke's Law<br>Pressure (Air and Water)<br>Calculations   | Electricity<br>Electromagnets<br>Circuits<br>Potential Difference<br>Resistance<br>Earth's Magnetic Field<br>Compasses  | Changes of State<br>Specific Heat Capacity   |  | Energy Stores<br>Kinetic Energy<br>GPE<br>Power<br>Efficiency<br>Conservation of energy<br>Energy Resources  |
| <b>Builds on</b>    | Energy   | Forces  | Electricity and Magnets   | Year 8 Chemistry 3   |  | Year 8 Energy  |
| <b>Leads to</b>     | Topic 18 Energy  | Topic 22 Forces   | Topic 19 Electricity  | Topic 21 Atomic Structure  |  | Topic 23 Waves   |
| <b>Year 9 Units</b> | <b>Climate Change and Human Impact</b>   |   | <b>Periodic Table and Acids and Alkalis</b>   | <b>Topic 15 Chemical Analysis</b>  |  |  |
| <b>Key concepts</b> | Global Warming<br>Greenhouse effect<br>Carbon Cycle<br>Composition of the Atmosphere<br>Human Activity and Impact  |   | Element Symbols<br>Chemical and Physical Properties<br>Mendeleev<br>Patterns in the PT<br>Metals v Non Metals<br>Conservation of Mass<br>pH Scale<br>Neutralisation                           | Chromatography<br>Purity<br>Gas tests  |  |  |
| <b>Builds on</b>    | Chemistry 1/2<br>Ecosystems  |   | Chemistry 1/2   | Chemistry 3 year 8   |  |  |
| <b>Leads to</b>     | Topic 16 Chemistry of the Atmosphere   |   | CC3/4 Atomic Structure and the Periodic Table<br>CC8 Acids and Alkalis  | Topic 11 Chemical Changes  |  |  |
| <b>Year 8 Units</b> | <b>Cells and Tissues<br/>Astronomy</b>   | <b>Chemistry 3<br/>Energy</b>   | <b>Diet and Disease<br/>Forces</b>  | <b>Sound and Light</b>   | <b>Extinction of Dinosaurs<br/>Electricity and Magnets</b>   | <b>TSLA Award</b>  |
| <b>Key concepts</b> | Cells<br>Cell organelles<br>Plant vs animal cells<br>Hierarchical organisation of multicellular organisms  | Reactivity series<br>Displacement<br>Precipitation<br>Metal + acids<br>Exo and endothermic<br>Acids and alkalis<br>Matter<br>Conservation of matter<br>Energy of matter<br>Energy transfer<br>Energy calculations | Healthy diet<br>Balanced and unbalanced meals<br>Energy in food<br>Bacteria in digestion<br>Enzymes in digestion<br>Push/pull<br>Balanced and unbalanced forces<br>Force arrows<br>$S = d/tu$ | Types of wave<br>Sound<br>Light<br>Auditory range<br>Ray model<br>Colours                            | Variation<br>Natural selection<br>Extinction<br>Biodiversity<br><br>Basic Circuits<br>Series vs Parallel<br>Resistance<br>PD<br>Magnets            | Effect of wave force on stone size<br>Effect of salt content on the physical properties of water.<br>The effect of human rubbish and its distribution within an ecosystem. |
| <b>Builds on</b>    | Human Body and Reproduction  | Chemistry 2<br>Forces   | Cells and Tissues   | Earth, Seasons and Galaxies  | Ecosystems<br>CREST AWARD YR 7   | Rock Cycle<br>Extinction of the Dinosaurs<br>Forces  |
| <b>Leads to</b>     | Ecosystems and Diet and Disease  | Chemistry 4<br>Energy Resources   | Topic 1 Cell Biology<br>Topic 2 Organisation  | Topic 23 Waves   | Topic 6 Inheritance, Variation and Evolution<br>Electricity and Electromagnets   | CC1/2 States of Matter<br>DNA and Specialised Cells<br>Force and pressure  |
| <b>Year 7 Units</b> | <b>Introduction to Science<br/>Chemistry 1</b>   | <b>Human Body</b>   | <b>Earth, Seasons and Galaxies<br/>Chemistry 2</b>  | <b>Reproduction</b>  | <b>Rock Cycle<br/>Electricity</b>  | <b>TSLA Award<br/>Ecosystems</b>   |
| <b>Key concepts</b> | Basics of practical skills and lab safety<br>Solute, solvents and solutions<br>States of matter<br>Separating mixtures<br>Atoms, elements and compounds<br>Simple chemical reactions<br>Chemical symbols | Skeleton<br>Muscles<br>Organs and tissues   | The sun and stars<br>Solar system<br>$Gravity = w = m \times gh$<br>Days, months, years<br>Seasons<br>Structure of an atom<br>Acids and alkalis<br>Displacement<br>Neutralisation             | Plant and animal reproduction<br>Fertilisation<br>Life in the uterus<br>Seed dispersal<br>Growing up | Structure of the earth<br>Types of rock<br>The rock cycle<br>Resources and recycling<br>Circuit Symbols<br>Series and Parallel Circuits<br>Current | Planning practical work<br>Writing predictions<br>Completing practical work<br>Current and circuits<br>Food Chains<br>Interdependence<br>Food Webs<br>Photosynthesis       |
| <b>Builds on</b>    | KS2  | KS2   | KS2<br>KS2  | Human Body   | KS2  | KS2  |
| <b>Leads to</b>     | Chemistry 2  | Reproduction  | Sound and Light<br>Chemistry 3  | Cells and Tissues  | Crest 2<br>Global Warming and Human Impact   | Extinction of the Dinosaurs<br>Electricity and Magnets   |