**Science**

**Implementation Statement**

In Years 7 and 8 students follow the Activate Science scheme of work.

**Assessments**

Students are assessed regularly through homework, classwork, end-of-topic tests and end-of-year exams. Homework is set on a weekly basis and students will be assessed through written activities which are marked by the teacher one week and verbal feedback the second week. Closer to end-of topic tests students are set online assessments from Doddle which provides instant feedback. The end-of-topic tests identify students who are on, above or below their expected grade, any student below their expected grade will be given the opportunity to improve their score. There is some variation in the sequence of topics because of availability of equipment.

**Accessibility**

All students are able to access the same curriculum as the department makes use of differentiated materials and tasks.

In Years 9, 10 and 11 students follow the Edexcel exam board curriculum.

**Assessments**

Students are assessed regularly through homework, classwork, end-of-topic tests, end-of-term tests and end-of-year exams. Homework is set on a weekly basis and students will be assessed through written activities which are marked by the teacher one week and verbal feedback the second week. The end-of-topic tests identify students who are on, above or below their expected grade, any student below their expected grade will be given the opportunity to improve their score. There is some variation in the sequence of topics between groups due to availability of equipment and clash of core practicals.

**Accessibility**

All students are able to access the same curriculum as the department makes use of differentiated materials and tasks.

**Key Stage 3**

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| **YEAR 7** | **AUTUMN TERM** | **SPRING TERM** | **SUMMER TERM** |
| **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** |
| **Introduction topic**(Safety in the lab)**Chemistry 1*** Acids & alkali
 | **Biology 1*** Cells
* Reproduction

**Chemistry 1(cont)*** Separating mixtures
 | **Physics 1*** Energy
* electricity
 | **Chemistry 2*** Particle model
* Atoms, elements & compounds
 | **Biology 2*** Muscles and bones
* Ecosystems
 | **Physics 2*** Forces
* Sound
 |
| **Links to prior learning** | **Introduction topic**Ensure students understand safety measures in a science lab and during practicals.Builds on from what they learned about acids from KS2. | **Biology 1**Builds on from a description of life processes and reproduction in plants and animals.**Chemistry 1(cont)**Builds from KS2 when students are introduced to filtering, sieving and evaporating. | **Physics 1**Builds on from KS2 work on brightness of bulb or volume of buzzer linked with voltage.Description of a simple circuit.Recognition of basic symbols. | **Chemistry 2**Builds on from KS2 work on grouping materials as solid, liquid and gas.Observing change of states.Introduction to evaporation and condensation. | **Biology 2**Builds on from prior KS2 work on animals having muscles and bones for support, protection and movement.Environments can change which can pose a threat to animals.  | **Physics 2**Builds on from KS2 work on gravity and falling objects. Identification of friction and different types.Recognition of vibrations from sounds. Finding patterns between volume of sound and strength of vibrations |

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| **YEAR 8** | **AUTUMN TERM** | **SPRING TERM** | **SUMMER TERM** |
| **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** |
| **Biology 1*** Food and nutrition
* Plants & their reproduction
 | **Chemistry 1*** Combustion
* The periodic table

**Physics 1*** Fluids
 | **Physics 1 (cont)*** Light
* Energy transfers
 | **Biology 2*** Breathing & respiration
* Unicellular organisms
 | **Chemistry 2*** Metals & their uses
* Rocks
 | **Physics 2*** Earth & space
 |
| **Links to prior learning** | **Biology 1**Builds on from KS2 knowledge when they recognise impact of diet and lifestyle on their bodies function.Identify the different parts of the plants, explore requirements of plants. Explore pollination, seed formation and dispersal. | **Chemistry 1**Builds on from KS2 work on burning. Students have explained how changes result in the formation of new materials including those related to burning.**Physics 1**Builds on from KS2 work on states of matter. Students identify parts played by evaporation and condensation in the water cycle. | **Physics 1 (cont)**Builds on from KS2 work on light. Students have recognised light travels in straight lines. Explained how we see things.Explored ideas about shadows and linking to light. | **Biology 2**Students identify main parts of the human circulatory system describing heart, blood and blood vessels.Builds on from KS2 work on living things. Describes how living things are classified into broad groups according to common observable characteristics.Reasoning as to why things have been classified into plants and animals. | **Chemistry 2**Builds on from KS2 work on rocks. Students describe in simple terms how fossils are formed when things that have lived are trapped within rock.  | **Physics 2**Builds on from KS2 work on earth and space. They have described movement of earth and planets. Described the sun, earth and moon as spherical bodies.Explored ideas of day and night. |

**Key Stage 4**

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| **YEAR 9** | **AUTUMN TERM** | **SPRING TERM** | **SUMMER TERM** |
| **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** |
| **Biology 1*** Cells
* Digestion
* Enzymes
* Transport

**Biology 2*** Specialised cells
* Nervous system
* Mitosis
 | **Chemistry 1 & 2*** States of matter
* Separating techniques

**Chemistry 3 & 4*** The periodic table
* Properties of elements
* Electronic structure

**Physics 1*** Motion
* Calculations of motion
 | **Chemistry 5,6,7** * Ionic bonding
* Covalent bonding
* Properties and structures

**Chemistry 8*** Reactions of acids & bases
* Neutralisation reactions
* Solubility of salts
* Mass calculations

**Physics 2*** Forces and motion
 | **Biology 3*** DNA
* Meiosis
* Inheritance

**Biology 4*** Natural selection
* Selective breeding
* Genetic engineering
 | **Chemistry 9*** Chemical formulae
* Masses
* Reacting masses
* Moles

**Review** * Biology 1,2,3,4
* Physics 1,2
 | **Review** * Chemistry 1,2
* Chemistry 3,4
* Chemistry 5,6,7
* Chemistry 8
* Chemistry 9

**END OF YEAR 9 EXAM** |
| **Links to prior learning** | **Biology 1**Builds on from KS3 work. Further study into:**Year 7 topics:** 7A – cells **Year 8 topics:** 8A –Food and nutrition**Biology 2**Builds on from KS3 work. Further study into:**Year 7 topics:** 7A – cells, 7C –Muscles & bones. | **Chemistry 1 & 2**Builds on from KS3 work. Further study into:**Year 7 topics:** 7E – mixtures and separations, 7G –the particle model, 7H – atoms, elements & molecules **Chemistry 3 & 4**Builds on from KS3 work. Further study into:**Year 8 topics:** 8F –The periodic table, 8G -Metals & their uses**Physics 1**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces | **Chemistry 5,6,7** Builds on from KS3 work. Further study into:**Year 7 topics:** 7E – mixtures and separations,**Year 8 topics:** 8G -Metals & their uses**Chemistry 8**Builds on from KS3 work. Further study into:**Year 7 topics:** 7F – Acids & alkalis**Year 8 topics:** 8H- Rocks**Physics 2**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces | **Biology 3**Builds on from KS3 work. Further study into:**Year 7 topics:** 7B – Reproduction**Year 8 topics:** 8B –Plant reproduction**Biology 4**Builds on from KS3 work. Further study into:**Year 7 topics:** 7B – Reproduction**Year 8 topics:** 8D- Unicellular organisms | **Chemistry 9**Builds on from KS3 work. Further study into:**Year 8 topics:** 8F –The periodic table |  |

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| **YEAR 10** | **AUTUMN TERM** | **SPRING TERM** | **SUMMER TERM** |
| **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** |
| **Physics 3** * Types of energy
* Energy calculations
* Energy transfers
* Conservation of energy

**Physics 4*** Wave properties
* Wave calculations

**Physics 5*** Electromagnetic spectrum
* Reflection
* Refraction
 | **Biology 5*** Types of disease
* Fighting infection
* Health & fitness

**Biology 6*** Photosynthesis
* Xylem & phloem
* Transpiration
* Plant adaptations
 |  **Chemistry 10,11,12** * Electrolysis
* Reactivity
* Ores
* Oxidation & reduction
* Life cycle assessment

**Chemistry 13,14,15*** Group 1,7 & 0
* Halogens
* Rates of reaction
* Exothermic & endothermic
 | **Chemistry 13,14,15 (cont)*** Group 1,7 & 0
* Halogens
* Rates of reaction
* Exothermic & endothermic

**Physics 6*** Atomic model
* Types of radiation
* Radioactive decay
* Half life
* Dangers of radiation
 | **Biology 7*** Hormones
* Menstrual cycle
* Blood glucose
* Diabetes

**Review** * Biology 1,2,3,4,5
* Physics 1,2,3,4,5,6
 | **Review** * Chemistry 1,2
* Chemistry 3,4
* Chemistry 5,6,7
* Chemistry 8
* Chemistry 9
* Chemistry 10,11,12

**END OF YEAR 10 EXAM** |
| **Links to prior learning** | **Physics 3**Builds on from KS3 work. Further study into:**Year 7 topics:** 7I –Energy **Year 8 topics:** 8K – Energy transfers**Physics 4**Builds on from KS3 work. Further study into:**Year 7 topics:** 7L –Sound**Physics 5****Year 8 topics:** 8J – Light | **Biology 5**Builds on from KS3 work. Further study into:**Year 7 topics:** 7D – Unicellular organisms **Biology 6**Builds on from KS3 work. Further study into:**Year 8 topics:** 8B -Plant & their reproduction | **Chemistry 10,11,12** Builds on from KS3 work. Further study into:**Year 8 topics:** 8G -Metals & their uses**Chemistry 13,14,15**Builds on from KS3 work. Further study into:**Year 8 topics:** 8E- Combustion8F –The periodic table | **Chemistry 13,14,15**Builds on from KS3 work. Further study into:**Year 8 topics:** 8E- Combustion8F –The periodic table **Physics 6**Builds on from KS3 work. Further study into:**Year 7 topics:** 7G –The particle model | **Biology 7**Builds on from KS3 work. Further study into:**Year 7 topics:** 7A – cells, 7B –Reproduction |  |

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| **YEAR 11** | **AUTUMN TERM** | **SPRING TERM** | **SUMMER TERM** |
| **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** | **TERM 1** | **TERM 2** |
| **Physics 7 & 8*** Work & power
* Vector diagrams

**Physics 9*** Electric circuits
* Resistance
* Power
* National grid

**Physics 10 & 11*** Magnets & magnetic fields
* Electromagnets
* Transformers
 | **YEAR 11- FIRST MOCK EXAM****Physics 10 & 11(cont)*** Magnets & magnetic fields
* Electromagnets

Transformers**Biology 8*** Exchange surfaces
* Circulatory system
* Respiration

**Biology 9*** Ecosystems
* Water cycle
* Carbon cycle
* Nitrogen cycle
 | **Physics 12 & 13** * Particle density
* Energy change & calculations
* Bending & stretching

**Chemistry 16 & 17*** Hydrocarbons
* Fractional distillation
* Combustion
* Early atmosphere
* Climate change
 | **Chemistry 16 & 17****(cont)*** Hydrocarbons
* Fractional distillation
* Combustion
* Early atmosphere
* Climate change

**Review for second mocks****Year 11 – second mock exam** | **Review** * Biology B1 –B9
* Chemistry C1 – C17
* Physics P1 –P13
 | **YEAR 11 GCSE EXAMINATIONS** |
| **Links to prior learning** | **Physics 7 & 8**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces **Physics 9**Builds on from KS3 work. Further study into:**Year 7 topics:** 7J – current electricity**Physics 10 & 11**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces  | **Physics 10 & 11**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces **Biology 8**Builds on from KS3 work. Further study into:**Year 8 topics:** 8C –Breathing & respiration**Biology 9**Builds on from KS3 work. Further study into:**Year 7 topics:** 7D - Ecosystems | **Physics 12 & 13**Builds on from KS3 work. Further study into:**Year 7 topics:** 7K – Forces**Year 8 topics:** 8I -Fluids**Chemistry 16 & 17**Builds on from KS3 work. Further study into:**Year 7 topics: 7E –** mixtures & separations**Year 8 topics:** 8E- Combustion | **Chemistry 16 & 17**Builds on from KS3 work. Further study into:**Year 7 topics: 7E –** mixtures & separations**Year 8 topics:** 8E- Combustion |  |  |

All students in year 9 have to study the Double Award Science GCSE. For the Double Award, students will follow the Edexcel GCSE Science course working towards two GCSE grades between 9 and 1. The Double Award course is a three-year GCSE course with all of the external assessments at the end of year 11. The Double Award is assessed through six 70 minute exams. The assessment of these courses is 100% examination, with higher tier papers aimed at grades 9 to 4 and foundation papers aimed at 5 to 1 grades, with no controlled assessments. Throughout the three-year course students will be assessed by their teacher on their classwork, homework, end-of-topic tests and end of year 9 & 10 exams, receiving feedback on their progress towards their target grade.