**Y10 – Separate Science (Biology)**

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Big Ideas | B3 -\* Infection and response | B4 - \*Bioenergetics | B5\* Homeostasis and Response | B6a\* Inheritance, variation, and evolution | B6b \*Inheritance, variation, and evolution | B7a\* Ecology |
|  Topics | Communicable and non-communicable diseasesMonoclonal antibodiesPlant diseases | PhotosynthesisRespiration | HomeostasisThe human nervous systemHormonal coordination in humansPlant hormones | ReproductionDNA structureMutationsInheritance | VariationEvolutionGenetic engineeringClassificationSpeciationCloning | CompetitionAdaptations, interdependence, and communities |
| Skills | DEVELOPMENT OF SCIENTIFIC THINKING- Understanding how scientific theories develop over time- Use a variety of models to represent ideas - Appreciate ethical issues- Describe and evaluate methods- Recognise the importance of peer review | EXPERIMENTAL SKILLS & STRATEGIES-Plan investigations- Carry out investigations- Describe and suggest techniques- Mathematical and statistical analysis | APPARATUS & TECHNIQUES-Use a range of equipment to take measurements- Safe use of heating equipment- Sampling techniques- Use a range of equipment to observe biological changes,-Safe and ethical use of living organisms- Measure rates of reaction of biological processes- Safe use of biological reagents |
| Assessment | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessments | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessments | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessments | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessments | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessments | Formative assessment every lesson.Range of learning & skill-based homework.Synoptic end of unit assessmentsPaper 1 END OF YEAR ASSESSMENT |
| Linked learning | Year 10 Biology builds on prior knowledge by spiralling the topics previously learnt in Year 9 such as cells, osmosis, diffusion, and microscopy. Learning components at the start of the lesson remind students of prior learning and point out links to previous topics.Links with other subjects: Maths – 10% of the science GCSE is numeracy based around fractions, standard form, and basic maths. Tabulation and analysis of data. English – Literacy link, scientific terminology, command words, comprehension, and reading and extended writing. History – Medicine through time and disease. Food – Bacterial diseases. Chemistry and Physics – consolidate working scientific skills and scientific literacy. Chemistry – consolidates knowledge of DNA structure and other biological molecules. |
| \*SMSC Links | 253 Provision for the spiritual development of pupils includes developing their:- ability to be reflective about their own beliefs and perspective on life- sense of enjoyment and fascination in learning about themselves, others, and the world around them,254 Provision for the moral development of pupils includes developing their: -understanding of the consequences of their behaviour and actions- interest in investigating and offering reasoned views about moral and ethical issues and ability to understand and appreciate the viewpoints of others on these issues |
| Literacy | Scientific vocabulary, terminology, and definitionInterpret observations, write conclusions, describe, and explain common concepts, compare, and evaluate | Numeracy | Use decimal forms, standard form, ratios, fractions, percentages, makes estimates, uncertainties, determining quantities, SI units, convert units, probabilityHandling data: interpret data, significant figures, construct tables and graphs, order of magnitude, scatter diagrams, calculate means, mode and medianAlgebra: use common expressions, solve simple algebraic equations, rearrange equations, substitute numbersGraphs: translate information between tables and graphs, understand linear relationships, plot variables, calculate surface area and volume |
| Enrichment | Period 6 CLIMB sessions.Developing STEM ambassador visitors to engage and inspire students.GCSE Science Live TripBiology challenge |
| Impact | Students are required to memorise key facts and be able to recall them and apply their knowledge to real life situations. A successful student will be able to link concepts together. Demonstrate the ability to work scientifically by following a method, identifying basic apparatus, collecting data, illustrating data, and drawing conclusions. Science will help students to become logical thinkers and problem solvers with a batter understanding of the world around them. Demonstrating resilience and the ability to consider moral and ethical implications of scientific developments. |

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| Ways to support student learning in this subject |
| * Encourage the completion of homework.
* Encourage discussion of science issues that arise in the news.
* Discuss science lessons and their progress.
* Encourage a positive attitude towards science.
* Encourage self-assessment and reflection using personalised learning checklists (PLCs)
* Practice units, unit conversions, standard form, rearranging equations and encourage the use of a calculator
* Use of low stakes questioning and exam material to build confidence and knowledge base
* Encourage students to use GCSEPod to consolidate knowledge and build on recall skills
* Refer students to LaunchPad revision materials
* Purchase CGP revision guides and workbooks for independent revision and practice
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