**Y11 – Combined Science SYNERGY (Physical Sciences)**

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Big Ideas | S7 – \*Movement and interactions | S7*(cont)* – \*Movement and interactions S8 – \*Guiding spaceship mother Earth towards a sustainable Future | Life & Environment revision | Life & Environment revision | Physical sciences revision |  |
|  Topics | S7a – Forces and motionS7b – ElectricityS7c – Acids and alkalis | S7d – Rate and extent of chemical changeS7e – Atoms into ions and ions into atomsS8a – Carbon chemistryS8b – Resources of materials and energy | Topics based on progress over time for each class personalised by teacher | Topics based on progress over time for each class personalised by teacher | Topics based on progress over time for each class personalised by teacher |  |
| Skills | DEVELOPMENT OF SCIENTIFIC THINKING- Understanding how scientific theories develop over time- Use a variety of models to represent ideas (2D & 3D forms)- 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- Evaluate methods | APPARATUS & TECHNIQUES-Use a range of equipment to take measurements- Safe use of heating equipment- Use a range of equipment to observe chemical reactions and electrochemical processes- Observations of waves and fluids- Measure energy changes, current, voltage and resistance-Range of separation techniques- Safe use of gases and 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 assessmentsPaper 1 & 2 PPE | Formative assessment every lesson.Range of learning & skill-based homework.Exam and skills practice | Formative assessment every lesson.Range of learning & skill-based homework.Exam and skills practicePaper 3 & 4 PPE | Formative assessment every lesson.Range of learning & skill-based homework.Exam and skills practiceTerminal assessments |  |
| Linked learning | Students will build on knowledge and skills developed in Key Stage 3 and Year 10 each topic area. Scientific practical skills are further developed, along with scientific literacy and numeracy. 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 and chemistry – calculations, rearranging equations, basic mathematical functions, and graph drawing. D&T – structure of metals, materials, electricity, and recycling of materials. Geography – recycling, energy efficiency and resources |
| \*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,- Use of imagination and creativity in their learning254 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.Handling data; interpret data, significant figures, construct tables and graphs, order of magnitude, scatter diagramsAlgebra: 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 Trip |
| 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)
* Refer to the Periodic Table
* Practice units, unit conversions, standard form, rearranging equations and encourage the use of a calculator
* Learn Physics equations
* Use of low stakes questioning and exam material to build confident 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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