**Curriculum Intent on a Page**

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| **Subject** | Science |
| **Subject Teacher** | Ralette Service |

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| **Intent statement – Our Curriculum Objectives** |
| At Pine Green our curriculum is broad and balanced to enable our students to have a wide knowledge and understanding about the world around them. It is rich in skills and knowledge, which ignites curiosity and prepares them well for future learning or employment.  Our curriculum is designed to provide students with a deep understanding of the scientific knowledge and ideas that impact them as individuals within a local and globalised context. As they move through the curriculum, students will be increasingly made to develop their curiosity, provide insight into working scientifically and appreciate the value of science in their everyday lives. |
| **Curriculum Sequencing** |
| At **KS3** we have a spiral curriculum with threshold concepts being revisited at the beginning of every topic. This gives students’ firm foundations upon which to build deeper knowledge. We have a focus on practical skills throughout KS3 to ensure these are fully embedded for further study. We also strive to give lots of real-life examples of science in action, this allows students to be able to communicate their learning with other people and to explore careers in the science industry.  Pupils are given opportunities to plan and carry out investigations; areas where they struggle such as applying abstract ideas are reinforced by demonstrations; role play, and activities designed to explain the abstract. Video clips also play an important role in delivering the key stage 3 curriculum as many pupils are visual learners and are more likely to connect with a screen. The use of ICT is encouraged throughout with pupils undertaking research tasks with the appropriate level of support.  As they progress through the curriculum themes are re-visited and understanding of topics and concepts are strengthened from AQA.  **At GCSE** we follow the AQA combined science route for some students. The students will study topics that cover Biology, Chemistry and Physics knowledge. These topics build on the concepts first met at KS3 and develop understanding further to ensure students become fluent in their scientific understanding.  **In Biology** we tackle core concepts such as cells, bioenergetics and ecology and these allow us to study recent developments in areas such as infection, inheritance and evolution. Working scientifically is an important skill for all students so we ensure we embed experiments throughout the biology topics.  **In Chemistry** we begin by developing a deep knowledge and understanding across the three key building blocks of Chemistry: the atom, the periodic table, and chemical reactions. We use these concepts as a starting point for all chemical knowledge and students are able to find answers through investigation and an understanding of developing scientific models. Our aim is for students to be able to work like an expert chemist.  **In Physics** our curriculum revolves around the central themes of Energy, Particles and Forces. Through the study of these larger themes, other associated fields are interwoven and provide practical context. Magnetism, particles, states of matter, waves and electricity are presented cyclically throughout KS3 and return in at GCSE. These topics provide insight and knowledge about the cornerstones of our everyday world and the role of our common day technology. They also provide insight about larger-scale phenomena and the grandeur and power of mankind’s most sophisticated technological achievements. |
| **Our Long-Term Plan** |
| **Year 7 -8**  Pupils should be able to plan different types of scientific enquiries to answer questions, including recognising variables. They should develop the skills to take measurements and use a range of scientific equipment. Pupils should record data and results using diagrams and labels, keys and tables and bar and line graphs. Report findings including writing conclusions, identifying relationships and trust in results.  **Year 9**  Students begin a course of study to gain an Entry Level Certificate in science. The AQA two-tier Entry-Level scheme is followed whereby pupils can gain either a single or double award. To prepare the more academic to access GCSE, Entry Level scheme is linked with AQA Foundation GCSE Synergy.  Students are assessed on practical assessments for each of the six components which rely on the student’s ability to plan; execute and analyse investigations; these assessments are designed by the teacher and can be modified to suit pupils needs. There are also six externally set examinations which are completed when students are ready and undertaken during class time with the support pupils usually have in lessons.  **Year 10 &11**  Students who are more able will assess the AQA foundation or higher GCSE Synergy. Students will be able to show and demonstrate knowledge in assessment objective one and two.  AO1: Show knowledge and understanding of science, and how it works, and apply it where appropriate. Students should be able to:  •  recall scientific facts  • apply scientific ideas  AO2: Demonstrate the ability to design an investigation, take measurements, present data and identify patterns and relationships. Students should be able to:  •  plan a simple investigation, identifying the techniques or equipment needed and the method to be followed  •  make a simple prediction about the outcome of the investigation  •  use equipment and materials safely to take simple measurements or observations that are meaningful and valid  •  record the results in an appropriate way  •  display the data using an appropriate method  •  state what has been found out during the investigation (drawing a conclusion) and describe simple relationships in the data  •  simply evaluate the investigation for its success in justifying the initial prediction.    For those unable to access the accreditation criteria the unit award scheme will be used to record their achievements. |
| **Assessment Opportunities** |
| Regular progress tasks involve formative assessment of scientific skills and required subject knowledge at the end of each topic. Fortnightly tasks are given to assess objectives and promote confidence. Summative assessments are made to identify pupil progress using realistic exam style questions past paper questions are you extensively to address all specification Aos for years 10-11. This helps to identify areas of weakness and act on using our school intervention staff.  . |

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| **Pine Green Curriculum** | |
| **Our Curriculum** | **Department Opportunities** |
| **Confidence, Independence & Resilience** | We expect students to become increasingly independent building confidence in practical, data handling skills, consolidation tasks, knowledge tests, and teamwork. We strive to create an atmosphere for learning using praise, positive comments and texts home, rewards, and certificates in assembly. We give students regular opportunities to challenge concepts and ideas, allowing students the opportunities to discuss and articulate views of science in a real-life context. |
| **Be Kind: Empathy & Compassion whilst valuing diversity** | Build on their understanding of the importance of British values, including democracy, the rule of law, individual liberty and tolerance and respect. |
| **Cultural Awareness** | Purposeful opportunities have been crafted into our schemes to provide opportunities for students to think deeply and articulate their thinking, improve their spiritual, social, moral, and cultural understanding by using cultural capital experiences throughout the year. Encouraging students to contribute to the life of the school and the community, including charity work, and use these ‘real’ contexts to develop their skills and knowledge. Developing partnerships with external providers that extend children’s opportunities for learning. |
| **Aspirations** | Develop new skills through a variety of interesting contexts to foster enjoyment, develop a rich and deep subject knowledge, build on their understanding of the importance of British values, including democracy, the rule of law, individual liberty and tolerance and respect, improve their spiritual, social, moral, and cultural understanding. |
| **Preparedness for the future** | Understanding the uses and implications of science today and for the future, to challenge received wisdom by considering new evidence and ideas, to use problem solving skills and numeracy within scientific concepts. Give students opportunities to evaluate social, economic and ethical issues relating to science as well as other issues. |

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| **Vulnerable Students checklist** | |
| **SEND** | **PP** |
| * Strategies for students with Dyslexia, including graphic organisers and task breakdown sheets * Strategies to support individual students identified in IEPs * Coloured overlays/paper provided for students with identified need * Quality-first teaching strategies employed in lessons, providing adaptation and structure, sensitive to student need | * Revision guides and other essential materials * Subsidized trips * Lunch provided * Cultural enrichment trips |

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| **Covid Catch Up** | |
| Skills Gaps | Knowledge Gaps |
| What **skills** students have missed out on in your subject and **what we’re going to do about it.**  Develop practical skills by working scientifically  Utilise practical workbook and providing more opportunities for students to work scientifically and independently in the lab  Repeating core skills  Develop scientific vocabulary  Utilising Kerboodle | What **knowledge** students have missed out on in your subject and what **we’re going to do about it.**  Depth in articulating scientific concepts clearly and precisely  Baseline tests  Use of formative and summative assessments  Focused intervention  Support students to retain and retrieve knowledge  Help students to direct their own learning  To use Seneca learning platform as a whole school approach |