# Year 9 Science - Curriculum Overview and KS3 Progress Descriptors

## Aims and Rationale

Students will continue to learn about the foundational aspects of science in Y9, which builds on their knowledge of science from KS2 as well as topics previously taught in Y7 and Y8. This includes study of plants and human anatomy, a range of chemical reactions, and study of Space and The Universe. Y9 is a transition year for Science, with some KS4 topics content being covered to provide a strong foundation for further study in Y10. For each of their Biology, Chemistry and Physics topics, they will also develop a range of experimental skills by undertaking a collection of practical activities throughout the year, which complement the theoretical content. Pupils will also have a checklist for each topic below in their exercise books. The assigned descriptor is a balanced viewpoint of both content understood and practical skills demonstrated.

## Curriculum Content

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| **Biology**<br>● Keeping Healthy<br>● Cell Level Systems (KS4)<br>● Scaling Up (KS4) | **Chemistry**<br>● Atomic Structure (KS4)<br>● Purity and Separation (KS4)<br>● Bonding (KS4) | **Physics**<br>● Sound Waves<br>● Light Waves<br>● Interacting Waves<br>● Energy, Power and Light |

## How we assess at Key Stage 3

At Hitchin Girls' School our curriculum is our progress model. Students benefit from a broad, diverse and challenging curriculum which increases in difficulty and challenge as students progress through the school. The expectation is that all students meet our curriculum at their relevant age range and as such meet the minimum of the secure descriptors below. Those working at an advancing level are working above, while those excelling are consistently working at a level far above their age range.

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| | *Developing* | *Secure* | *Advancing* | *Excelling* |
|---|---|---|---|---|
| **Curriculum Content & Working Scientifically** | • I am starting to remember some of the key content explored in the Y9 curriculum. I am starting to be able to describe some scientific ideas such as the structure of cell systems, the nature of atomic structure, or the properties of sound and light waves.<br>• I am beginning to connect my new learning with previous topics taught prior to Y9, but I will need to increase the frequency with which I do this.<br>• I am not always able to use my understanding to explain observations.<br>• I can usually follow instructions to carry out a more complex scientific experiment but may need guidance and reminders to conduct it correctly and safely. I am beginning to write down my observations, but not always able to correctly draw a table or graph from data. | • I have remembered some of the key content explored in the Y9 curriculum. I can describe some scientific ideas using the correct scientific vocabulary, which is often more complex than that encountered in previous years, but my explanations are at times incomplete.<br>• I am beginning to demonstrate skills that are expected of students at KS4 level.<br>• I am able to connect my new learning with previous topics taught prior to Y9 to deepen my level of understanding, but there is scope to do this more accurately and more frequently.<br>• I can follow instructions to carry out a more complex scientific experiment correctly and safely but may not yet be able to consistently identify variables or say whether the experiment is valid. I can write down observations and am likely to be able to correctly draw a table or graph from data.<br>• I am starting to show a secure grasp of the curriculum, which now pushes my knowledge to a level above KS3. | • I am able to remember the majority of the key content explored in the Y8 curriculum. I can both describe and explain most of the ideas covered at a KS3 level using key scientific vocabulary, most of which is now at an increasingly advanced level. I can communicate my understanding competently.<br>• I am able to connect my new learning with previous topics taught prior to Y9 to deepen and enrich my understanding. I do this frequently and accurately.<br>• I can not only follow instructions to carry out a more complex scientific experiment safely and correctly, but am able to plan investigations, identify variables and obtain accurate data. I can draw appropriate graphs with the correct scale and draw lines of best fit. I am likely to be able to spot patterns in data.<br>• I can show some of the skills and knowledge expected at a level above KS3. | • I am able to remember the vast majority of the key content explored in the Y9 curriculum with very few errors or omissions. I can both describe and explain most of the ideas covered in KS3 using key scientific vocabulary, which is now at a high level. I can communicate my understanding competently and fluently.<br>• I am able to fluently and effectively connect new learning with previous topics taught prior to Y9 to deepen and enrich my understanding. I do this frequently and accurately. This enables my knowledge to exceed the expected level at KS3.<br>• I can not only follow instructions to carry out a more complex scientific experiment safely and correctly, but am able to plan investigations, identify variables and obtain accurate data. I am also able to link the practical work to the relevant scientific theory. I can draw appropriate graphs with the correct scale and draw lines of best fit.<br>• I am likely to be able to spot patterns in data, and am likely to be able to identify limitations and drawbacks with experiments, and evaluate them effectively.<br>• I have demonstrated that I have extended their knowledge of the topics independently, and this is mostly at a KS4 level or beyond. |