Holland Park School | *Year 8: Science Overview*

Overview	8PL Light and Space The unit builds on work done at KS2, which should be borne in mind in terms of starting points. Students should know that light travels in straight lines, is reflected and enters the eye to see. The unit begins by looking at light as a wave, that transfers energy and what happens when it meets different surfaces. Electrical and chemical effects should be studied – perhaps by way of a solar cell investigation. The unit then moves to reflection, refraction in more detail and this offers the opportunity to look at reproducibility in data and accuracy of measurements, before moving on to vision and problems with vision, the colours of the spectrum and how colour is seen and then how different coloured light can be produced and affects the colour of objects. The final section deals with the Earth in space, the cause of seasons and the Earth's place in the universe. Connections between this and light can be explored – light years, speed of light, how we see stars and planets etc. 8CP Periodic Table This unit of work begins with what an element is and how elements can combine/mix to form compounds and mixtures. Some work is then done linking elements to the periodic table and their significance. Following this, compounds are studied in more detail including naming them and how to write a formula. This links to the next area of conservation of mass showing the same numbers of atoms on each side of a balanced symbol equation and use the reaction of magnesium and oxygen to help develop an understanding of this. The periodic table is then looked at in more detail starting first with the Dalton atomic model and moving on to the nuclear model and electron configuration. Group 1 and 7 and their main properties are then looked at in further detail including their reactivity and general uses. 8BD Digestion and Nutrition This unit builds on the work done in year 7 on organ systems and diffusion. It begins by establishing the components of food and the use of each within the body. Students will look at what is meant by a balanced diet and the consequences when nutritional and calorie intake is not inadequate or excessive. Students will carry out practical tests to test foods for the main components and then move on to look at the organs of the digestive system and the role each plays in digestion. The role of enzymes and gut bacteria are introduced as part of this. 8PE Electricity and Magnetism Students build on their concrete experience of electrical circuits (KS2) and are introduced to current and potential difference in the context of series circuits (parallel circuits follow in Year 9, to build understanding in small steps). Students are also introduced to the relationship between power, energy transferred and time,

	and how energy at home is typically measured in kWh. Students then consider the cost of electricity and efficiency of appliances. 8CM Materials and Earth The unit begins by looking at the structure of the Earth and some basic plate tectonics to highlight the changing nature of the surface and how this can lead to earthquakes and volcanoes. The formation of the three different types of rock and their physical properties is then covered, as well as fossil formation. The unit then moves on to the atmosphere, how it has changed over the Earth's history and more recently, and the human impact on that. Finally, the properties of some of the materials made from earth's resources and recycling. 9BP Plants and Photosynthesis This unit provides the foundation for work in key stage 4 on limiting factors in photosynthesis, energy transfer through an ecosystem and the mineral requirements of plants. The unit starts with exploring the structure and function of roots, with emphasis on their adaptations. Pupils then progress on to the process of photosynthesis and its importance. This will include understanding that the carbon dioxide for photosynthesis comes from the air, that chlorophyll enables a plant to utilise light in photosynthesis, the role of the leaf in photosynthesis, the importance and roles of the xylem and phloem and the importance of photosynthesis to humans and other animals. 8BE Ecology Unit begins by recapping basic KS_3 knowledge of food chains, and building on this to look at food webs, what organisms are dependent on each other for and bioaccumulation. Students will then look at factors that affect populations of organisms, impacts of changing populations and undertake the required practical to estimate daisy population. They then move on to classify living organisms, focusing on the features of the main chordate group. This leads into how well adapted organisms are to their environment and how these adaptations may improve over time by mutations and natural selection. The unit finishes by focusing on biodiversity and the importance of taking steps to maintain, and where possible improve, biodiversity.
Assessment	One assessment every half term. Assessments will test factual knowledge, application of that knowledge and working scientifically skills including (but not limited to): identification of independent variables, dependent variables and control variables; repeatability, reproducibility and resolution in readings; writing conclusions, using data to support conclusions; use of evidence in changing scientific ideas.