Ashley College Curriculum			Subject: Science				Teacher: FOS	
Groups	Brief/ Heading from subject LTPs Across all key stages opportunities to promote an anti-racist/gender equal approach will be included wherever possible to highlight the specific initiatives and achievements of these groups of individuals working in the Scientific world. Explore and celebrate prominent and lesser known black and ethnic minority engineers and Scientists Women & Girls in Science -Achievements of women in the fields of Science Engineering and Mathematics will be promoted and celebrated The WISE Campaign (Women into Science and Engineering)						Subject Intent	Syllabus/ exam board qualification Suggested reading/text books
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2		
KS3	**Contact Forces** **Pressure** **Magnetism** **Electromagnets**	**Work** **Heating and Cooling** **Wave effects** **Wave properties**	**Elements** **Periodic table** **The work of Dimitri Mendeleev How logic and determination enabled this Russian Scientist 's ideas to prove other more established ideas wrong** **Types of reaction** **Chemical energy 1**	**Climate** **Earth resources** **The effect that nations actions have on the world-wide environment and how many of the world activists are resisting this (Greta Thunberg)**	**Breathing** **Digestion** **Respiration**	**Photosynthesis** **Evolution** **Inheritance** *The rights and wrongs of genetic engineering* *Linking the centuries old idea of selective breeding in plants and animals, with modern genetic engineering* **Linking the work of genome sequencing and inheritance and how the work of Alan Turin (persecuted for sexuality) has escalated this process** **Linked to the adaptations of peoples from specific parts of the world (ethnic groups) help them survive the environment**	Students should continue to be able to work scientifically in their approach to understanding the world around them. They should understand that many ideas we use in science today are ideas that fit a model and that models can and do change as new information and discoveries come to light. At Ashley College we strive to develop a deeper understanding of a range of scientific ideas in the subject disciplines of Biology, Chemistry and Physics working to begin to see the connections between these subject areas and become aware of some of the big ideas underpinning scientific knowledge and understanding. Students are encouraged to relate scientific explanations to phenomena in the world around them a start to use modelling and abstract ideas to develop and evaluate explanations. At Ashley College, we all recognise our responsibility of teaching students well through our curriculum. Lessons reflect subject knowledge through clearly presented materials that engage and inspire discussion. Lessons are appropriately scaffolded to ensure that all students can achieve the highest standards. The curriculum in each area is sequenced to ensure that students are able to recall prior knowledge and	**<u>AQA Combined Science Synergy GCSE at both Foundation and Higher levels</u>** Text books from all Key Stage 3 courses are used as they highlight different aspects of the topics covered. These include: Activate Science Spotlight Science 7, 8 & 9 Fusion Science 11–14 1, 2 & 3 Collins Key Sage 3 Science 1, 2 & 3 This programme of study is also supported by Bitesize, Oak Academy as well as Century The awareness of what is on offer to students to enhance their Cultural Capital will always address the ethnic and gender balance

Cross Curricular References		**English** Using classification keys, yes / no questions in completing charts summer term. **Maths** Displaying data from tables in graphs, bar charts and pie charts use of scale and angles Autumn 2 **Drama** Moral issues debated in Autumn 1 link to selective breeding for design (Pugs) **ICT** Using spread sheets and excel autumn and summer **Food** Food groups including dairy and meat products and visit to the farm, also link to different diets. Make the obvious link to crop yield looking at the difference milk producing cows to beef cattle - linked to genes. Assembly Nutrition	**English** Links to writing to argue and persuade (AQA) summer 2 so in science "Why is it important economically to recycle?" **Maths** Averages and range Autumn 2 as well as Calculations for Autumn 1 working out the relative costs of mining and recycling **History** How the third world has been exploited by the West for their natural materials link to the scramble for Africa Summer and decline of the British Empire **Food** Fair trade in summer term	**English** Links to descriptive writing – phrases - summer 2, in science using language to explain the vastness of the universe 'to the moon and back' 'light years ahead' **Maths** Autumn 2 Stats - Working out the speed from the formula speed = distance / time What is a light year; how fast does light travel? Autumn 1 – Statistics - in maths Reading and drawing distance / time graphs Introduction of use of standard form - KS4 concept **REP** How religion and science often clash Autumn 1 and 2 Belief Systems	**Maths** Statistics in Autumn 2 Calculating reaction times linked to speed and road safety **PSHCE** Legal / illegal drugs throughout the year and the effect of drugs on the whole family / community **History** Importation of produce such as tobacco and coffee links to scramble for Africa and reasons for colonisation. Opiates as a drug and in medicine.	**Eng 2** Use scientific words in descriptions in summer 2 Hurricane hits England poem Autumn 1 **PSHCE** Living in the wider world Wellbeing Polytunnel Food Environmental impact of food choices Maths Autumn 2 statistics / pie charts relating to environment before summer term Probability summer 2 – Maths do pie charts during summer term En	**PSHCE** Moral dilemmas Maths Statistics Autumn 2 Use of wave formula – Autumn 1 Eng Persuasive writing to argue or persuade to express a point of view e.g health and phone masts Wellbeing Grounding – importance of connecting the earth and use of gong – soundwaves	build upon this making connection within and across subjects. Students will revisit previous learning and be able to show their understanding through activities which require application of prior knowledge. Skills for future learning and employment for example team work, listening and speaking, are developed in all areas of our curriculum. We recognise the need for all students to have the opportunity to study all disciplines of Science at the college but we also accept that not all students will stay in Ashley College for the complete key-stage and therefore may not have the time to cover every aspect of all Sciences. For this reason, all students will have the opportunity to continue a spiralled general Science curriculum in key-stage 3 and follow the AQA entry level Science that could lead to a GCSE in Coordinated Science Synergy. We recognise the need for all students to have the opportunity to study all disciplines of Science at the college but we also accept that not all students will stay in Ashley College for the complete key-stage and therefore may not have the time to cover every aspect of all Sciences. For this reason, all students will have the opportunity to complete the whole of AQA entry level Science and will also be able to complete Coordinated Science Synergy **7 Famous Women in STEM Who Defy the Gender Gap** **Marie Skłodowska Curie (1867 - 1934)** **Katherine Johnson (1918 - 2020)** **Jane C. Wright (1919 - 2013)** **Tu YouYou (1930 - Present)** **Françoise Barré-Sinoussi (1947 - Present)** **Lydia Villa-Komaroff (1947 - Present)**	
KS4	**Yr10**	**UNIT 1** **Building Blocks** States of matter Atomic structure The use of models to explain science Cells in animals and plants Moral issues involved in genetic engineering and cloning Waves (check KS 3) Unproven fears about the effect of EM radiation and the real dangers	**UNIT 5** **Building blocks for understanding** The periodic table Chemical quantities Mathematical calculations in moles and bond energies Dimitri Mendeleev	**UNIT 2** **Transport over larger distances** Systems in the human body The endocrine system and the secretion of hormones that affect: - Puberty, human reproduction. Contraception (moral issues see unit 1) The use of genes and gene therapy to "fix" future genetic disorders.	**UNIT 6** **Interactions over small and large distances** Forces and energy changes Renewable energy sources Structure and bonding Linked back to chemical quantities Magnetism and electromagnetism	**UNIT 3** **Interactions with the environment** Lifestyle and health Link with health issues in PE and Food Tech. The way that different ethnic groups are susceptible to specific conditions (sickle-cell) Radiation and risk Link back to Waves and EM spectrum.	**UNIT 3 (continued)** **Interactions with the environment (continued)** Preventing, treating and curing diseases Looking at the pandemic Production and development of drugs and vaccines How modern genetic engineering houses fears of scientists manipulating genes of future children not only to eliminate		

				Plants and photosynthesis		Celebrating the work of Marie Currie and her team's insistence that she should be the recipient of the Nobel Prize	genetic disorders but to create designer babies or simply to choose the sex of the young.	**Mae C. Jemison (1956 - Present)**	
	Cross Curricular References	Formulae density, specific heat capacity Maths Large and small numbers using standard form Maths unit 18	Mathematical calculations in moles and bond energies Looking at the patterns of numbers in the periodic table and relating it to proton / neutron / electron numbers	Presenting limiting factors graphically Plant's place in keeping the atmosphere in balance removing carbon dioxide and production of oxygen	Resultant forces adding and subtracting forces sine, cosine etc forces at angles. chemical quantities Calculations on moles and yield	Quadratic graphing in Maths unit 16 Link back to Waves and EM spectrum	Looking at continuous and non-continuous variations and how we display them graphically		
	Yr11	**<u>UNIT 7</u>** **<u>Movement and interactions</u>** Forces and Motion Resultant forces parallelogram of forces Maths Maths vectors Congruence and vectors Electricity	**<u>UNIT 7 (continued)</u>** **<u>Movement and interactions</u>** The rate and extent of chemical change Chemical quantities	**<u>UNIT 4</u>** **<u>Explaining change</u>** The Earth's atmosphere Ecosystems and biodiversity Inheritance, Variation and evolution	**<u>UNIT 8</u>** Guiding spaceship Earth to a sustainable future Carbon Chemistry Resources of materials and energy	**Revision of year 10 work &Past paper Practice**			
	Cross Curricular References	Algebra in maths unit 20 Acids and Alkalis Maths of concentration and titration Vectors & scales Link to use of drugs / alcohol with reaction time and road safety- Calculating the thinking / braking distance and relating it to reaction time calculating stopping distance	Atoms and ions Maths of scale, suffixes + prefixes In measurements and magnification Standard form maths	Punnet tables probability Maths Link back to the issues covered in genetics % change of gases in the atmosphere Maths Valuing all in nature and the contribution each makes to maintain balance. Global responsibility for national issues – Pollution; global warming; ozone	Calculating the cost of mining new materials over recycling Link back to the role of plants in the carbon cycle and maintaining the environment The importance of recycling and upcycling				