Curriculum and Assessment Policy Template

Science

Curriculum Statement of Intent:

The Science Curriculum is designed to develop the key skills and disciplines that form The Scientific Method. By combining these skills with understanding of key concepts, students will be able to answer key questions about the world around them.

An enquiring mindset, allied with a broad range of analytical skills, makes Science a keystone subject in many careers. Science is also the foundation for progress in society and a functional Scientific Literacy is vital to ensure that students grow to be knowledgeable and adaptable citizens in our constantly evolving world.

Curriculum Statement of Implementation:

In the Science Faculty, the curriculum is broken into three main key stages. In years 7 and 8 (Key Stage 3), students study content from all three Science disciplines. The topics covered are chosen to build upon content studied in the Primary phase (Key Stage 2) as part of a challenging bridge to year 9, when GCSE content begin.

Our KS3 curriculum does not make the distinction between Biology, Chemistry and Physics explicit. This is based on research findings that suggest this is likely to cause disparity between the three subjects, mainly on gender lines. Instead, our individual topics are based around a central question or theme. This allows students a context within which the wide range of subject content to be studied but also exemplifies the relevancy of the concepts being covered. This is further supported by the use of practical work to link the domain of ideas and the domain of observables. This practical work also develops key skills required at GCSE and a structured paradigm of inquisitive thought and action.

As students move into year 9, they begin to study GCSE content. Our KS3 curriculum is designed to make this transition as smooth as possible with potential misconceptions addressed in earlier years. Students will also be aided by key parts of the Scientific Method having already been developed. In KS4 the distinction between the three Science disciplines will be much clearer. This is to allow students to study effectively for their exams but to also make an informed choice if they wish to study one or more Science subjects to A level. Whether students study Triple or Combined Science, they will rotate between all three disciplines on a regular basis to ensure that their retention of core ideas and content is developed.

Science plays an important role in the teaching of SMSC, especially regarding health and disease. This includes:

- *The menstrual cycle*
- *The link between lifestyle and disease (e.g. coronary artery disease, diabetes, cirrhosis etc.)*
- *Contraception and STIs*
- *Cloning*

This is in addition to many current issues of a global scale such as:

- *Global food and energy security*
- *Plastic pollution*
- *Global warming and acid rain.*

In Science, students will study these issues in a factual manner in order to enter the world of work fully informed of some of the major issues facing society.

Science is a subject that is more engaging and purposeful when linked to a real world context. This allows for Science to be a vehicle for careers guidance, as many areas of Science research or the Scientific Method are vital for an enormous range of careers. This helps engagement but also raises aspirations towards higher paying, professional careers.

With regard to planning in Science:

1) *Long term plans are Programmes of Study which are in place for all year groups. These ensure that all of the content is completed in the allocated learning time, along with opportunities for assessment and feedback.*
2) *Medium term planning is in the form of Schemes of Work. These break down the specification into smaller chunks (usually 1-2 lessons). Each of these Schemes of Work includes ideas for delivery, relevant exam paper questions, homework, assessments and also common misconceptions. This style of medium term planning allows teachers to plan a lesson that is bespoke for their class within a common framework.*
3) *Short term planning is completed by the individual teacher using the PoS and SoW. This must also include risk assessments (where necessary) in line the Faculty policy and the whole school policies and expectations regarding lesson planning and assessment.*

Curriculum Coverage

Curriculum and Topics being covered in each year group

	Autumn	Spring	Summer
Year 7 (3 lessons a week)	Scientific Philosophy • Why do we have science? • How do we do scientific investigations? • How do we do science safely? History of the planet • Rock formation • Dinosaurs • Evolution How the human body functions • Cardiovascular system • Skeletal system • Nervous system Staying fit and healthy • The importance of exercise • Aerobic and anaerobic exercise • Diets and diseases	What's everything made from? • Atomic structure • Kinetic theory • How do we change state? How do light and sound work? • Types of waves • How waves interact with the body • How are waves useful in technology? How do we stay warm and keep cool? • How do we store and transfer energy? • How much does it cost? • Conduction, convection & radiation	Are we ruining the planet? • How has the atmosphere changed? • How do we combat pollution? • How important is recycling? What role do plants play? • Making chemicals using light • Why grass grows quicker in summer • Why is water so important to plants? What would it be like to live in space? • The solar system and planetary cycles • Gravity and microgravity • Effects on the body in space
SMSC Careers guidance British Values Sex Education	Evolution – area of disagreement between Science and Religion. Purpose of Science in society and as a career. Medicine/Physiology as a career. Importance of health and wellbeing in modern society.	Importance of waves as communication in the modern world. Careers in wave based technology – e.g. the internet, mobile telecommunications, etc. Issues regarding false claims with mobile phone technology and health issues.	Importance of environmentalism in the modern world. Challenging misconceptions regarding climate change denial. Modern issues regarding the mission to Mars and current space endeavours.
Year 8 (3 lessons a week)	Where do babies come from? • Sexual and asexual reproduction • Fertility • Pregnancy Are there plenty of fish in the ocean? • Ocean ecosystems • Variation and evolution • Physics of the oceans	Acids and toilets • Differences between acids and bases • Applications of acids and bases • Reactions of acids and bases Waves for technology • How mobile phones work • How Sky TV works • How Virgin Media works	How fast is Formula 1? • Forces acting on objects • Friction and air resistance • Newton's laws Why is gold so expensive? • The reactivity series • The lack of reaction of noble metals • Metal extraction

	Can we live forever? • History of medicine • DNA - building blocks of humans • Future of medicine Why some things go bang and others don't • Why do chemical reactions occur? • What affects the rate of chemical reactions?	Are force fields a reality? • Electric circuits and symbols • The natural magnetism of the earth • Static electricity	Project (TBC – options from IOP etc. being considered.)
SMSC Careers British Values Sex Education	Sex education issues regarding contraception and pregnancy. Human impact on the marine environment – over fishing and plastic pollution. Impact of medicine on the modern world, dealing with cancer as a modern day issue that impacts most students.	Careers regarding telecommunications.	Link to modern day economy and precious metals. Links to careers in F1 and aerospace.
Year 9 (5 lessons a week)	B1 – Key Concepts in Biology • Microscopes (including core practical) • Plant, animal and specialized cells • Enzymes • Enzyme activity (including core practical) • Transport in plants and animals (including core practical) C1 – States of Matter • States of matter C2 – Methods of Separating and Purifying Substances • Mixtures • Filtration • Chromatography • Distillation (including core practical) • Drinking water C3 – Atomic Structure • Atomic structure	B3 – Genetics • Meiosis • DNA • DNA extraction • Alleles • Inheritance • Mutations • Variation C5 – Ionic Bonding • Ionic bonds and lattices • Properties of ionic compounds C6 – Covalent bonds • Covalent bonds, properties and substances C7 – Types of Substances • Molecular compounds • Allotropes of carbon • Properties of metals based on structure B4 – Natural Selection and Genetic Modification	P2 – Forces and Motion • Resultant forces • Newton's First Law • Mass and weight • Newton's Second Law (including core practical) • Newton's Third Law • Momentum • Stopping distances • Crash hazards P3 – Conservation of Energy • Energy stores and transfers • Energy efficiency • Stored energies • Renewable and non renewable energies P4 – Waves • Describing waves • Wave speeds (including core practical) • Refraction P5 – Light and the Electromagnetic Spectrum

	• Isotopes B2 – Cells and Control • Mitosis • Growth • Stem cells • Nervous system • Neurotransmission speeds C4 – The Periodic Table • Elements and The Periodic Table • Atomic number and the Periodic Table • Electronic configurations and the Periodic Table	• Evidence for human evolution • Darwin's theory • Classification • Breeds and varieties • Genes in agriculture and medicine C8 – Exchange and Transport in Animals • Efficient transport and exchange • The circulatory system • The heart • Cellular respiration • Rates of respiration (including core practical) P1 – Motion • Vectors and scalars • Distance/time graphs • Acceleration • Velocity/time graphs	• EM waves and the EM spectrum (including core practical) • Uses of EM waves • Dangers of EM waves
SMSC Careers British Values Sex Education	Careers in medicine. Ethical implications of stem cells. Link of cancer to mitosis. Embryo development Effects of drugs Discussion of lack of potable water around the world.	Discussion of genetic diseases. Impact of lifestyle choice on health (e.g. cardiovascular disease, fitness, BMI etc.) Debate over Darwin's theory and evolution of humans.	Uses of waves across all industrial sectors. Health and safety regarding use of lasers, tanning beds etc. Alternative energy and reducing energy wastage as an environmental and economic issue.
Year 10 Combined Science (6 lessons a week)	P4– Waves • Describing waves • Wave speeds (including core practical) • Refraction P5– Light and the Electromagnetic Spectrum • EM waves and the EM spectrum (including core practical) • Uses of EM waves • Dangers of EM waves P6 – Radioactivity • Atomic models	P9 – Electricity and Circuits • Electric circuits • Current and potential difference • Current, charge and energy • Resistance (including core practical) • Power • Transferring energy • Electrical safety P10 - Magnets and the Motor Effect • Magnets and magnetic fields • Electromagnetism	P12 – Particle Model • Particles and density (including core practical) • Energy and changes of state • Energy calculations (including core practical) • Gas temperature and pressure P13 – Forces and Matter • Bending and stretching (including core practical) • Extension and energy transfers. B9 – Ecosystems and Material Cycles

	• Electrons and orbits • Background radiation • Types of radiation • Radioactive decay • Half life • Dangers of radioactivity B4 – Natural Selection and Genetic Modification • Evidence for human evolution • Darwin's theory • Classification • Breeds and varieties • Genes in agriculture and medicine B5 – Health, Disease and the Development of Medicines • Health and disease • Non communicable diseases • Cardiovascular disease • Pathogens • Spreading pathogens • Physical and chemical barriers • The immune system • Antibiotics B6 – Plant Structures and Their Functions • Photosynthesis • Factors that affect photosynthesis (including core practical) • Absorbing water and mineral ions • Transpiration and translocation	• Magnetic forces P11 – Electromagnetic Induction • Transformers • Transformers and energy C9 – Calculations Involving Masses • Masses and empirical formulae • Conservation of mass • Moles C10 – Electrolytic Processes • Electrolysis (including core practical) • Products from electrolysis C11 – Obtaining and Using Metals • Reactivity • Ores • Oxidation and reduction • Life cycle assessment and recycling C12 – Reversible Reactions and Equilibria • Dynamic equilibrium.	• Ecosystems • Abiotic factors and communities • Sampling (includes core practical) • Biotic factors and communities • Parasitism and mutualism • Biodiversity and humans • Preserving biodiversity • The water cycle • The carbon cycle • The nitrogen cycle
SMSC Careers British Values Sex Education	Uses of waves across all industrial sectors. Health and safety regarding use of lasers, tanning beds etc. Overuse of antibiotics and MRSA. Reducing spread of pathogens, including STIs.	Safe use of electricity. Metal recycling as an environmental and economic issue.	Impact of humans on the environment.

	How lifestyle choices can impact on health. Debate over Darwin's theory and human evolution. Discovery of radioactivity (Curie etc.) – can be linked to risks of		
Year 10 Astronomy (2 lessons a week)	1 – Planet Earth • Earth structure • Latitude and longitude • Earth's atmosphere • Night sky 6 – Celestial observation • Constellations • Celestial sphere • Celestial coordinate systems • Diurnal motion • Circumpolar stars • Practical observing 2 – The lunar disc • Lunar surface • Moon's orbit 9 – Exploring the Moon • History of lunar exploration • Origin of the moon 11 – Exploring the Solar System • Planets and dwarf planets • Comets • Meteoroids and meteorites • Size of the solar system • Optical telescopes – refracting and reflecting	11 – Exploring the solar system • Space probes 5 – Solar system observation • Observing the planets • Apparent motion of the Sun 7 – Solar system models • Solar and Lunar cycles • Models of the Solar System 10 – Solar astronomy • Observing the Sun • The Sun's interior • The Sun's atmosphere • The Solar wind 3 – Earth-Sun-Moon system • Solar and Lunar eclipses • Tides and precession • Relative measurements of E-S-M • Diameters and distances	8 – Planetary motion and gravity • Orbits and Kepler's 1st Law • Kepler's 2nd Law • Kepler's 3rd Law • Gravitation – linking Kepler's and Newton's laws 4 – Time and E-S-M cycles • Sidereal and synodic time • Lunar phases • The equation of time
SMSC Careers British Values Sex Education	1 - Earth's atmosphere – looking at pollution 9 – history of lunar exploration – links to aerospace engineering 11 – Lenses in telescopes - optometry	7 – Models of the solar system – religious and scientific views on the origin of the universe 11 – space probes – links to engineering and technology Mutual respect and tolerance: Galileo – Difficulties he faced with the church, imprisonment and discreditation.	
Year 11 Triple Science	**<u>Previous Core Practicals:</u>** B1 [x3], B5, B6, B8, B9 C2, C8 [x2], C10, C18, C23, C25, P2, P4, P5 [x2]	SP7 • The solar system • Gravity & orbits	REVISION AND EXAMS

(5 lessons a week) Revision schedule to be finalized. Triple group to be finalized by start of Autumn 2.	SB7: • Hormones • Hormonal control of metabolic rate • The Menstrual cycle • Hormones and the menstrual cycle • Control of blood glucose • Type 2 diabetes • Thermoregulation • Osmoregulation • The kidneys SB8: • Efficient transport and exchange • Factors affecting diffusion • The circulatory system • The heart • Cellular respiration • **CORE PRACTICAL:** Respiration rates SC9 • Mass & Empirical formulae • Conservation of mass • Moles SC12 • Dynamic equilibrium SC14/15/16 • Yields • Atom Economy • Concentrations • Titrations and calculations • **CORE PRACTICAL:** Acid-Alkali titration • Molar volume of gases • Fertilizers and the Haber process • Factors affecting equilibrium • Chemical cells and fuel cells	• Life cycles & stars • Red-shift • Origin of the universe • SP10/11 • Electric circuits • Current & potential difference • Current, charge and energy • Resistance • More about resistance • **CORE PRACTICAL: Investigating resistance** • Transferring energy • Power • Transferring energy by electricity • Electrical safety • Charges and static electricity • Dangers & uses of static electricity • Electric fields SP12/13 • Magnets & Magnetic fields • Electromagnetism • Magnetic forces • Electromagnetic induction • The National grid • Transformers and Energy SP14/15 • Particles and Energy • **CORE PRACTICAL: Investigating densities** • Energy and changes of state • Energy calculations • **CORE PRACTICAL: Investigating water** • Gas temperature and pressure • Gas pressure and volume • Bending and stretching • Extension and energy transfers • **CORE PRACTICAL: Investigating springs** • Pressure in fluids	

		• Pressure and upthrust NOTE FOR STUDENTS WHO HAVE MOVED FROM 10S: SC13, SC35, SC26 and SP9 will need to be caught up.	
SMSC Careers British Values Sex Education	**SMSC**: What are the moral and social issues related regarding Chemical and fuel cells vs. "traditional" energy resources? What are the implications in ART interventions in conception? **Careers**: SB7+8: Medical professions, SC9 Analytical/Research chemistry careers SC12-14: Chemical Engineering professions **British Values:** Democracy: Government responsibility and involvement in new energy source technologies **Sex Education:** N/A	**SMSC**: How is technology moving the human species forward? What are the moral and social implications of automation and technological progress? **Careers**: SC25-26: Analytical Chemistry careers SP9-13: Electronic & Electrical Engineering **British Values:** Democracy: How much involvement should the government have in moderating progress and automotive processes to support job availability? **Sex Education:** N/A	
Year 11 Combined Science (5 lessons a week) Revision schedule to be finalized. Triple group to be finalized by start of Autumn 2.	Previous Core Practicals (from B1, B6, B8, C2, C8, C14, P2, P4, P5) C5– Ionic Bonding • Ionic bonds and lattices • Properties of ionic compounds C6– Covalent bonds • Covalent bonds, properties and substances C7– Types of Substances • Molecular compounds • Allotropes of carbon • Properties of metals based on structure C10 – Electrolytic Processes • Electrolysis (including core practical)	P9 – Electricity and Circuits • Electric circuits • Current and potential difference • Current, charge and energy • Resistance (including core practical) • Power • Transferring energy • Electrical safety P10 - Magnets and the Motor Effect • Magnets and magnetic fields • Electromagnetism • Magnetic forces P11 – Electromagnetic Induction • Transformers • Transformers and energy P12 – Particle Model	REVISION AND EXAMS

	• Products from electrolysis C11 – Obtaining and Using Metals • Reactivity • Ores • Oxidation and reduction • Life cycle assessment and recycling C12 – Reversible Reactions and Equilibria • Dynamic equilibrium.	• Particles and density (including core practical) • Energy and changes of state • Energy calculations (including core practical) • Gas temperature and pressure P13 – Forces and Matter • Bending and stretching (including core practical) • Extension and energy transfers. REVISION OF PRIOR CONTENT	
SMSC Careers British Values Sex Education	Recycling as an environmental and economic issue. Use of life cycle assessments in industry.	Electrical safety Forces and matter relates to materials and engineering careers.	
Year 12 Chemistry	**<u>AS content</u>** Topic 1: Atomic Structure and The Periodic Table Topic 2: Bonding & Structure Topic 5: Formulae, Equations and Amounts of Substance Topic 6: Organic Chemistry I	**<u>AS content</u>** Topic 3 – Redox Topic 4 – Inorganic chemistry and the periodic table Topic 7 – Modern Analytical techniques I Topic 8 – Energetics I Topic 9 – Kinetics I Topic 10 –Equilibrium I	2nd year "A level" content to start in the summer term following assessment
SMSC Careers British Values Sex Education	**SMSC**: Awe and wonder with regards to the complexity and scale of atomic structure and amounts of substances. Links can be made between science and spirituality at this stage **Careers**: There are a multitude of career links to be made with the content: Pharmaceutical industry, uncountable scientific research posts, chemical engineering, medical professions, engineering positions… **British Values:** Links can be made with the "rule of Law"	**SMSC**: Again, Awe and wonder with regards to Energetic processes that are occurring in front of eyes but not always with explicit visual signs. Links to the early periodic table and the moral, social and cultural issues that hindered and/or supported its development **Careers**: As in the Autumn term **British Values:** Link some of the constraints scientists faced during the 17-20th centuries when	TBC

	value here with regards to the constraints of developing organic products, their marketing and uses. Links to the illegal pharmaceutical trade can also be made. **Sex Education:** No direct link here	proposing new ideas now part of this content to the individual liberty and democracy we now have the freedom to enjoy. **Sex Education:** No direct link here	
Year 12 Physics	Topic 2: Mechanics • Describing motion graphically • Equations for speed and acceleration • Newton's Second Law • Vectors • Power and efficiency • Momentum • Equations of motion • Free body force diagrams Topic 5: Waves and the particle nature of light • Wave properties • Wave equation • Light • Ray diagrams	Topic 4: Materials • Density • Hooke's Law • Stress, strain, Young's modulus. Topic 3: Electrical circuits • Current and potential difference • Kirchoff's Laws • Power, potential divider, emf and resistivity • Conduction mechanisms Topic 5: Waves and the particle nature of light • Photon model • Spectra	Topic 5: Waves and the particle nature of light (continued) • Photoelectric effect and wave-particle duality Topic 6: Further mechanics • Impulse • Conservation of momentum • Circular motion and centripetal force. Topic 12: Gravitational fields • Field models, inverse square law, Newton's law of gravitation.
SMSC Careers British Values Sex Education	Links to most engineering and optics based careers.	Links to Materials Science and other engineering jobs.	Links to modern careers in quantum physics and engineering.

Curriculum – Assessment (Measuring Impact)

Data Drop Points

The following statements outline the contributing assessment information sources which, aggregated, provide 'Working At Grade' entries for each child throughout the year.

Year 7

Data Drop point 1:

In Autumn there will be three topic assessments based on the units studied (History of the planet, How the human body functions and Staying fit and healthy). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. Grades will be decided using a normalised distribution of student marks, along with reference to the grading of the questions. Scientific philosophy will not be explicitly examined but will form an implicit skill set that will be developed and assessed throughout all three Key Stages. As we move through the term, synoptic elements from previous units will also be included in some of the questions. The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 2:

In Spring there will be three topic assessments based on the units studied (What's everything made from, How do light and sound work, How do we stay warm and keep cool). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. Grades will be decided using a normalised distribution of student marks, along with reference to the grading of the questions. As we move through the term, synoptic elements from previous units will also be included in some of the questions (including questions from the Autumn term). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 3:

In Summer there will be three topic assessments based on the units studied (Are we ruining the planet, What role do plants play and What would it be like to live in space). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. Grades will be decided using a normalised distribution of student marks, along with reference to the grading of the questions. As we move through the term, synoptic elements from previous units will also be included in some of the questions (including questions from earlier in the year). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 8

Data Drop point 1:

In Autumn there will be four topic assessments based on the units studied (Where do babies come from, Are there plenty of fish in the ocean, Can we live forever, Why some things go bang and others don't). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. As we move through the term, synoptic elements from previous units will also be included in some of the questions. The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 2:

In Spring there will be three topic assessments based on the units studied (Acids and toilets, Waves for technology, Are force fields a reality). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. Grades will be decided using a normalised distribution of student marks, along with reference to the grading of the

questions. As we move through the term, synoptic elements from previous units will also be included in some of the questions (including questions from the Autumn term). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 3:

In Summer there will be two topic assessments based on the units studied (How fast is Formula 1, Why is gold so expensive). The questions on these papers will be based on previous KS3 SATs questions as well as relevant past GCSE questions. Grades will be decided using a normalised distribution of student marks, along with reference to the grading of the questions. As we move through the term, synoptic elements from previous units will also be included in some of the questions (including questions from earlier in the year). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 9

Data Drop point 1:

In Autumn, there will be a topic assessment for each of the units studied (B1, B2, C1, C2, C3 and C4) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 2:

In Spring, there will be a topic assessment for each of the units studied (B3, C5, C6, C7 and C8) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied, plus questions which will assess content studied in Autumn) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 3:

In Summer, there will be a topic assessment for each of the units studied (P2, P3, P4 and P5) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied, plus questions which will assess content studied for the entire year) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied – this will be in the form of two papers which will include elements of Biology, Chemistry and Physics. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 10 – Combined Science

Data Drop point 1:

In Autumn, there will be a topic assessment for each of the units studied (B4, B5, B6, P4, P5 and P6) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 2:

In Spring, there will be a topic assessment for each of the units studied (P9, P10, P11, C9, C10, C11 and C12) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied, plus questions which will assess content studied in Autumn) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 3:

In Summer, there will be a topic assessment for each of the units studied (P12, P13 and B9) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel for each unit. There will also be a final assessment which will consist of a full suite of 6 exam papers from 2018. The final grade will be based on the result of these mocks, although mitigation may well be made for absence or dramatic underperformance based on assessments completed earlier in the year.

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 10 – Astronomy

Data Drop point 1:

In Autumn, there will be a topic assessment for each of the units studied (Planet Earth, Celestial Observation, The Lunar Disc, Exploring the Moon and Exploring the Solar System) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel/Micklemore for each unit. There will also be a final assessment (which will include elements of all of the units studied) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 2:

In Spring, there will be a topic assessment for each of the units studied (Solar System Observation, Solar System models, Solar astronomy and Earth-Moon-Sun system) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel/Micklemore for each unit. There will also be a final assessment (which will include elements of all of the units studied, plus questions which will assess content studied in Autumn) comprised of exam questions from SAMs and ASAMs (plus 2018 papers, if required). The final grade will be an amalgam of the grades achieved in each of these formative assessments along with a summative assessment at the end of the term which will include elements from all topics studied. All assessments will be placed in a tracker and an average calculated, with the synoptic, summative assessment given additional weighting (+20%).

Data Drop point 3:

In Summer, there will be a topic assessment for each of the units studied (Planetary motion and gravity and Time and E-S-M cycles) although these are likely to be merged at different points to make a more meaningful assessment. These assessments will be based on exam style questions provided by Edexcel/Micklemore for each unit. There will also be a final assessment which will consist of a full exam paper from 2018. The final grade will be based on the result of these mocks, although mitigation may well me made for absence or dramatic underperformance based on assessments completed earlier in the year.

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 11 – Triple Science

Data Drop point 1:

This grade entry will be based on a full series of 6 mock exams that will take place in December 2018. The working at grade will be based wholly on this. Mitigation based on prior results will take place if a student is absent or unexpectedly underperforms.

Data Drop point 2:

This grade entry will be based on a full series of 6 mock exams that will take place in March 2018. The working at grade will be based wholly on this. Mitigation based on prior results will take place if a student is absent or unexpectedly underperforms.

Data Drop point 3:

Predictions will be entered after the Easter Holiday for all year 11 students. This will based on the mock window 2 results along with mock exam results that have been completed (due to be series of 6 papers, one per week) completed by students.

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 11 – Combined Science

Data Drop point 1:

This grade entry will be based on a full series of 6 mock exams that will take place in December 2018. The working at grade will be based wholly on this. Mitigation based on prior results will take place if a student is absent or unexpectedly underperforms.

Data Drop point 2:

This grade entry will be based on a full series of 6 mock exams that will take place in March 2018. The working at grade will be based wholly on this. Mitigation based on prior results will take place if a student is absent or unexpectedly underperforms.

Data Drop point 3:

Predictions will be entered after the Easter Holiday for all year 11 students. This will based on the mock window 2 results along with mock exam results that have been completed (due to be series of 6 papers, one per week) completed by students.

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Year 12

Data Drop point 1:

In Autumn, there will be a topic assessment for each of the units studied. These assessments will be based on past exam and exam style questions from Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units studied) comprised of exam questions for all of the content covered to this point. The final grade will be based on final, summative assessment with mitigation given for students who are absent or dramatically underperformed based on prior assessments.

Data Drop point 2:

In Spring, there will be a topic assessment for each of the units studied. These assessments will be based on past exam and exam style questions from Edexcel for each unit. There will also be a final assessment (which will include elements of all of the units

studied) comprised of exam questions for all of the content covered to this point. The final grade will be based on final, summative assessment with mitigation given for students who are absent or dramatically underperformed based on prior assessments.

Data Drop point 3:

In Spring, there will be a topic assessment for each of the units studied. These assessments will be based on past exam and exam style questions from Edexcel for each unit. There will also be a final which will be comprised of the AS level papers. The final grade will be based on final, summative assessment with mitigation given for students who are absent or dramatically underperformed based on prior assessments. The exam boundaries will be modified from the AS boundaries to reflect the smaller amount of content covered.

Moderation processes: *For each summative assessment, 10-15% of the class will be moderated (dependent on group size). This sample will be representative of the group and will also include the highest and lowest marked papers from the group (if not already in the sample). If inaccuracies or inconsistencies are found, the group's papers will be remarked.*

Week number	Lesson content
1	Topic 1: Biological Molecules • Carbohydrates and lipids • Inorganic ions and water • Proteins • DNA and protein synthesis • Enzymes
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8	Topic 2: Cells, Viruses and Reproduction of Living Things • Eukaryotic and prokaryotic cell structure and function • Microscopy • Viruses • Eukaryotic cell cycle and division • Sexual reproduction in mammals
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16	Topic 4: Exchange and Transport • Cell transport mechanisms • Surface area to volume ratios • Gas exchange • Circulation • Transport of gases in the blood • Transfer of materials between the circulatory system and cells • Transport in plants •
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25	Topic 3: Classification and Biodiversity • Classification • Natural selection • Biodiversity
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29	Topic 5: Energy for Biological Processes • Aerobic respiration, glycolysis, link reaction and the Krebs cycle • Oxidative phosphorylation • Anaerobic respiration • Photosynthetic pigments
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36	Topic 9: Control Systems • Homeostasis and chemical control in mammals • Chemical control in plants • Osmoregulation and thermoregulation • Structure and function of the mammalian nervous system • Nervous transmission • Detection of light by mammals • Effect of drugs on the nervous system • Control of heart rate in mammals
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44	Topic 6: Microbiology and Pathogens • Microbial techniques • Bacteria as pathogens • Action of antibiotics and antibiotic resistance • Response to infection
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52	Topic 7: Modern Genetics • Gene sequencing, stem cells and gene technology
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54	Topic 8: Origins of Genetic Variation • Origins of genetic variation, transfer of genetic information and gene pools
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57	Topic 10: Ecosystems • Energy transfer through ecosystems • Changes in ecosystems • Human effects of ecosystems
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Week number	Lesson content
1	Topic 1: Atomic Structure and The Periodic Table • Atomic number and mass, electron configuration • Periodicity in the Periodic Table • Explaining trends in periods 2 and 3
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3	
4	Topic 5: Formulae, Equations and Amounts of Substance • Full and ionic equations for reactions • Moles and the Avogadro constant • Calculations in moles • Calculations for titrations
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8	Topic 2: Bonding • Ionic and covalent bonding • Types of structure • Electronegativity, bond polarity and intermolecular forces • Formation of solutions
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12	Topic 3: Redox • Oxidation and reduction • Oxidation numbers • Ionic half equations
13	Topic 4: The Elements of Groups 1, 2 and 7 • Reactions of groups 1, 2 and 7 • Explaining the trends in groups 1, 2 and 7 • Explaining redox reactions of group 7 using oxidation numbers
14	
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16	Topic 6: Organic Chemistry • Naming of organic compounds • Alkanes and radical substitution reactions • Alkenes and their reactions • Electrophilic addition reactions, polymer formation and their uses • Reactions of the haloalkanes • Trends in Reactivity of Nucleophilic Substitution Reactions • Reactions and uses of alcohols • Carrying Out a Preparation of an Organic Liquid
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26	Topic 8: Energetics I • Enthalpy changes and Hess' Law
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28	Topic 13: Lattice energy and Entropy • Born-Haber cycles, enthalpy changes • Entropy in chemical reactions • Gibbs free energy in chemical reactions
29	
30	
31	Topic 10: Equilibrium I • Reversible reactions and industrial processes
32	Topic 11: Equilibrium II • Equilibrium constants in homogenous and heterogenous systems
33	Topic 12: Acid-base equilibria

Week number	Lesson content
34	• Proton donors and acceptors • Defining pH mathematically • Acid dissociation constants and the ionic product of water • Titration curves and buffer solutions
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36	Topic 14: Redox II • Electrode potentials • Electrochemical cells • Redox equilibria • Redox titrations
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40	Topic 15: The Transition Elements • Properties of transition metals and their compounds • Transition metal complexes and ligands • Redox reactions of transition metals • Stability of complexes and transition metals as catalysts
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44	Topic 9: Kinetics I • Explaining how factors affect rates of reaction
45	Topic 16: Kinetics II • Rate equations • Half life and catalysts • Using kinetics to investigate mechanisms.
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48	Topic 17: Organic Chemistry II • Stereoisomers and mechanisms • Chemistry of carbonyls • Chemistry of carboxylic acids and derivatives
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51	Topic 18A and B: Organic Chemistry III • Arenes • Electrophilic substitution reactions • Organic compounds containing nitrogen, amino acids • Condensation polymers and amino acids
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55	Topics 7: Mass Spectrometry and Infrared (IR) Spectroscopy • Methods to find the structure of organic compounds
56	Topic 19: Modern Analytical Techniques II • Chromatography • NMR spectroscopy • Identifying organic compounds using mass spectrometry
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59	Topic 18C: Organic Synthesis • Planning and synethsising organic compounds
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Assessment

Paper 1: Advanced Inorganic and Physical Chemistry	
*Paper code: 9CH0/01	
• Questions draw on content from Topics 1, 2, 3, 4, 5, 8, 10 and Topics 11–15. • Questions are broken down into a number of parts. • Availability: May/June • First assessment: 2017 • The assessment is 1 hour 45 minutes. • The assessment consists of 90 marks.	30% of the total qualification

Paper 2: Advanced Organic and Physical Chemistry	
*Paper code: 9CH0/02	
• Questions draw on content from Topics 2, 3, 5, 6, 7, 9 and Topics 16–19. • Questions are broken down into a number of parts. • Availability: May/June • First assessment: 2017 • The assessment is 1 hour 45 minutes. • The assessment consists of 90 marks.	30% of the total qualification

Paper 3: General and Practical Principles in Chemistry	
*Paper code: 9CH0/03	
• Questions draw on content from Topics 1–19. • Questions are broken down into a number of parts. • Availability: May/June • First assessment: 2017 • The assessment is 2 hours 30 minutes. • The assessment consists of 120 marks.	40% of the total qualification

Specification:
https://qualifications.pearson.com/content/dam/pdf/A%20Level/Chemistry/2015/Specification%20and%20sample%20assessments/A_level_Chemistry_2015_Specification.pdf

Week Number	Lesson Content
1	Topic 2: Mechanics • Describing motion graphically • Equations for speed and acceleration • Newton's Second Law • Vectors • Power and efficiency • Momentum • Equations of motion • Free body force diagrams
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10	Topics 5: Waves and Particle Nature of Light • Wave properties: wavefronts, coherence, phase, nodes and antinodes, diffraction • Wave equation • Light: reflection and refraction • Simple ray diagrams
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17	Topic 4: Materials • Density • Hooke's law • Stress, strain and Young's modulus, tensile strength
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20	Topic 3: Electric Circuits • Current and potential difference • Series and parallel circuits (Kirchoff's Laws) • Power, potential dividers, emf and resistivity • Conduction mechanisms
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26	Topic 5: Waves and Particle Nature of Light • Photon model • Spectra • Photoelectric effect and wave-particle duality
27	
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29	Topic 6: Further Mechanics • Impulse • Conservation of momentum • Circular motion and centripetal force
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33	Topic 12: Gravitational Fields • Field models, inverse square law and Newton's Law of Gravitation.
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35	Topic 7: Electric Fields • Electrostatic forces and electric fields • Force between point charges • Electric potential and forces on charges • Capacitance and capacitors
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40	Topic 7: Magnetic Fields • Magnetic fields, right hand grip rule and Fleming's Left Hand Law • Forces in magnetic fields • Magnetic flux density, Faraday's Law and Lenz's Law
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42	
43	
44	Topic 8: Nuclear and Particle Physics • Thermionic principles • Cyclotrons • Structure of matter • Matter, antimatter and annihilation • The Standard Model
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48	Topic 13: Oscillations • Simple Harmonic Motion • Pendulums • Resonance
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51	Topic 9: Thermodynamics • Pressure • Ideal gases and the equation of state • Kinetic theory and absolute zero • Specific heat capacity and specific latent heat
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54	Topics 10 & 11: Space and Nuclear Radiation • Black bodies and the Stefan-Boltzmann law • Wein's Law • Standard candles and the inverse square law • Stages of star evolution and the Hertzsprung-Russell diagram • Nuclear binding energy, gravitational collapse • Alpha, beta and gamma radiation. Nuclear decay equations • Fission and fusion • Redshift, Hubble's law, acceleration of the Universe. • Dark matter and the Hubble constant.
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Assessment:

Paper 1: Advanced Physics I	
	*Paper code: 9PH0/01
• Questions draw on content from the topics listed in the section *Qualification at a glance.* • Questions are broken down into a number of parts. • Availability: May/June • First assessment: 2017 • The assessment is 1 hour 45 minutes. • The assessment consists of 90 marks.	**30% of the total qualification**

Paper 2: Advanced Physics II	
	*Paper code: 9PH0/02
• Questions draw on content from the topics listed in the section *Qualification at a glance.* • Questions are broken down into a number of parts. • Availability: May/June • First assessment: 2017 • The assessment is 1 hour 45 minutes. • The assessment consists of 90 marks.	**30% of the total qualification**

Paper 3: General and Practical Principles in Physics	
	*Paper code: 9PH0/03
• Questions draw on content from any of the topics in the specification. • Questions are broken down into a number of parts. • Questions may involve two or more topics. • Availability: May/June • First assessment: 2017 • The assessment is 2 hours 30 minutes. • The assessment consists of 120 marks.	**40% of the total qualification**

Specification:
https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/PearsonEdexcel-Alevel-Physics-Spec.pdf