Notes

Based on the proposed schemes of work to be taught from September 2022 which are currently in development and are founded in the Pearson Exploring Science Working Scientifically adjusted and adapted for the requirements of our students. The schemes of work are designed to challenge our students, develop independent thinking skills and to create resilient learners.

Subject group		
	Faculty	Science
	Subject	KS3 Science

Year 7							
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Unit title	**Practical Skills**	**Forces, energy and electricity**	**Particles, Acids and Mixtures**	**Cells, tissues, organs and systems**	**More Energy**	**Resources from the Earth**	**Habitats and Adaptations**
Subject Knowledge introduced / developed / revised	**Introduced** The Scientific method, developing and testing hypotheses, selecting and using scientific equipment, recording results, graph and table skills **Developed** - Investigations (KS2). **Revised** - none	**Introduced:** Energy changes and transfers, changes in systems, forces and motion,current electricity, pressure **Developed** - Investigations (KS2). **Revised** - none	**Introduced:** Particle nature of matter, atoms elements and compounds, pure and impure substances, chemical reactions **Developed** - Investigations (KS2). **Revised** - none	**Introduced** Structure and function of living organisms, skeletal, nervous and skeleto-muscular systems, nutrition and digestion, gas exchange sytems **Developed** - Investigations (KS2). **Revised** - none	**Introduced:** Renewable and non-renewable sources of energy, wind farm debate, insulation, heat exchange, forms of energy, energy transfers **Developed** - Investigations (KS2). **Revised** - Forces, energy and electricity	**Introduced** Earth and atmosphere **Developed** particle nature of matter, atoms elements and compounds, pure and impure substances, chemical reactions, investigations (KS2). **Revised** - Particles, acids and mixtures	**Introduced** Relationships in an ecosystem **Developed** - Investigations (KS2) gas and exchange systems, structure and function of living organisms **Revised** - Cells tissues, organs and systems
Skills developed / extended / used	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in reliable evidence **Extended** - Investigations at Key Stage 2 **Used** - Literacy, reading and numeracy skills
Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Establishing the rules and behaviours in the secondary science laboratory - laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working, debate	Laboratory safety, collaborative working	Laboratory safety, collaborative working
Links to 'Destinations and Employability'	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions
Enrichment Opportunities offered or developed	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club

Subject group		
	Faculty	Science
	Subject	KS3 Science

Year 8		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
	Unit title	**Earth and Space**	**Developing Life**	**Chemical reactions**	**Forces and fluids**	**Issues in Biology**	**More chemical reactions**	**Practical Skills**
	Subject Knowledge introduced / developed / revised	**Introduced** Space physics **Developed** Structure of the Earth, forces, energy, describing motion, forces and motion, balanced forces , gravity and orbital motion **Revised** - Materials from our Earth	**Introduced** Reproduction in humans and plants **Developed** Structure and function of living organisms, nutrition and digestion, gas and exchange systems **Revised** - Cells, tissues, organs and systems	**Introduced** The Periodic Table **Developed** The particulate nature of matter, atoms elements and compounds, chemical reactions **Revised** - Resources from our Earth, Particles, Acids and Mixtures	**Introduced:** Kinetic energy and gravitational potential energy calculations, pressure, materials, pressure **Developed** - Energy changes and transfers, changes in systems, forces and motion **Revised** - Forces, energy and electricity, Energy resources	**Introduced: GCSE biology content** **Developed** - Relationships in an ecosystem, genetics and evolution, gas and exchange systems, structure and function of living organisms , reproduction and health, energy in ecosystems, genetics and evolution, disease, control systems **Revised** - Developing Life, Cells, tissues, organs and systems, habitats and ecosystems	**Introduced:** Energetics, Reactivity series of metals, Earth as a source of limited resources, solubility **Developed** - The Periodic Tablepure and impure substances, chemical reactions **Revised** - Laboratory Science, Particles, Acids and Mixtures	**Introduced** The Scientific method, developing and testing hypotheses, selecting and using scientific equipment, recording results, graph and table skills **Developed** - Investigations (KS2). **Revised** - none
	Skills developed / extended / used	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills	**Developed** - Numeracy and graph skills, scientific attitudes, experimental skills, analysis and evaluation, measurements - recording results and observations at Secondary level - coming to a balanced conclusion founded in evidence - development and use of models **Extended** - Investigations at Key Stage 2 and from Year 7 **Used** - Literacy, reading and numeracy skills
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working	Laboratory safety, collaborative working
	Links to 'Destinations and Employability'	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data, working in groups, considering and listening to others opinions
	Enrichment Opportunities offered or developed	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key stage 3 science club	Practical activities throughout the module and Key Stage 3 science club	Practical activities throughout the module and Key Stage 3 science club

Subject group	Faculty	Science
	Subject	KS4 Science

Year 9	Unit	1	2	3	4	5	6
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
	Unit title	**B1.1 Building Blocks of Life**	**C1.1 Atoms & Elements**	**P1.1 Energy**	**B1.2 Health & Disease**	**C1.2 Separating Substances**	**P1.2 Waves**
	Subject Knowledge introduced / developed / revised	**Introduced:** Structure of bacterial cells. Comparing eukaryotic/prokaryotic cells. Inheritance and interpreting genetic diagrams. **Developed**: Using microscopes. The structure of DNA.	**Introduced**: Structure of the atom,including subatomic particles and electronic configuration. Isotopes **Developed**: Layout of the periodic table. **Revised**: States of matter.	**Introduced**: Power, current, efficiency, time, voltage and the associated equations. National Grid and the transmission of electricity. **Developed:** Rearrangment of equations.	**Introduced:**The CNS including neurones and reflex arc. Immunity and treatments of diseases including antibiotics. Calculating BMI and evaluating the impacts on health. **Developed**: Health and disease.	**Introduced**: Simple and fractional distillation. Making water drinkable. **Developed**: Crystallisation techniques. **Revised**: States of matter, Chromatography and calculating Rf value.	**Introduced** : Properties of waves, comparing and calculating wavelength and frequency. The EM spectrum, including the dangers and uses. **Developed**: Calculating wave speed,
	Skills developed / extended / used	**Developed:** Using microscopes, drawing scientifically and calculating magnification, percentage change. Describing and explaining how to carry DNA extraction. Used: Literacy & numeracy skills.	**Developed:** Data interpretation of graphs. Analysisng cooling curves/heating curves.	**Developed**: Mathematical skills such as using and converting between units. Calcuating effeciency as percentages. **Extended**: Combining equations together. Rearrangment of equations. **Used**: Literacy & numeracy	**Developed:** Analysing and interpreting graphs. Calculating BMI. **Extended**: Use of units and mathmatical skills. **Used**: Literacy and numeracy.	**Extended:** Practical skills, data analysis and interpretation.	**Developed:** Mathematical skills including conversions between nm,m,um which link to high frequency and energy levels. **Extended**: Combining equations together. **Used**: Literacy and numeracy. Ray boxes practical techniques.
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	History of the development of microscopes. Group work. Peer assessment. Identifying and managing risks.	Group work. Peer assessment.	Group work. Peer assessment.	Class/ group discussions about how difference cultures are affected by disease and the appropraite courses of action to take. Impact of diseases on NHS (CD/NCD)	Practical activities. Group/team work Identifying and managing risks.	Group work. Peer assessment. Identifying and managing risks.
	Links to 'Destinations and Employability'	Related to the following careers: Microbiology Biochemistry Lab technician	N/A	Related to the following careers: Electrician National grid operator Engineer	Links to NHS careers.	Related to the following careers: Forensic science Lab science Quality control officer	Related to the following careers: Astronomer/NASA Geographical seismic Operator/technician Radio consulatnt/communications
	Enrichment Opportunities offered or developed	Presentations by labs/ professionals.	Research into how the model of the atom and our understanding have changed over time.	Virtual national Grid Tour.	Potential visit to Hunterian Museum.	N/A	N/A

Subject group	Faculty	Science
	Subject	Biology

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 10	Unit title	**B2.1 Key Concepts 2**	**B2.2 Cells and Control**	**B2.3 hormones**	**B2.4 Plants**	**B2.5 The Human Body**
	Subject Knowledge introduced / developed / revised	**Introduced**: Enzymes and the lock and key method. Enzyme activity and factors which impact rate. Movement of substance inluding diffusion, active transport and osmosis. **Developed**: Movement of molecules. **Revised**: Food groups and respiration.	**Introduced**: Call division specifically the stages of both mitosis and meiosis and comparision of both types of cell division. Growth and percentile charts. The role and uses of stem cells. **Developed**: The structure and roles of specialised cells. **Revised**: The structure and roles of animal and plant cells.	**Introduced**: The role of hormones and glands. The effects of hormones on metabolism, the menstrual cycle and diabetes. **Developed**: Symptoms and treatments of non-communicable diseases. **Revised**:Organ systems.	**Introduced**: Limiting factors of photosynthesis. Transpiration and translocation. The structures and roles of xylem and phloem. **Developed**:Structure of a leaf and the adaptations relating to photosynthesis. **Revised**: The equaition and role of photosynthesis.	**Introduced**: Aerobic and anaerobic respiration.The structures and roles of blood vessels. Gas exchange and the adaptations of the aveoli. **Developed**: Respiration as a life process. The strucure of the heart and lungs. **Revised**: Organ systems. The structure and roles of cells. The movement of molecules- specifically osmosis, diffusion and active transport.
	Skills developed / extended / used	**Developed**: Practical skills - core practical enzymes/pH. **Extended**: Data interpretion and analysis. **Used**:Literacy and numeracy. Identifying and managing risks.	**Developed**: Practical skills. **Extended**: Data interpretion and analysis. **Used**: Literacy and numeracy. Identifying and managing risks.	**Developed**: Practical skills. **Extended**: Data interpretion and data analysis. **Used**: Literacy and numeracy. Identifying and managing risks.	**Developed**: Practical skills - core practical the effect of light intensity on the rate of photosynthesis. **Extended**: Data interpretion and analysis of data presented graphically. **Used**:Literacy and numeracy. Identifying and managing risks.	**Developed**: Practical skills - dissections. **Extended**: Data interpretion and data analysis. **Used**: Literacy and numeracy. Identifying and managing risks.
	Opportunities to develop Respectful attitudes / inclusion	Group work. Peer assessment.	Group work. Peer assessment. Impacts of stem cell research and cancer.	Class/ group discussions about how difference cultures HRT, IVF	Class/ group discussions on conservation and the effects of deforestation.	Class/ group discussions on heart/ lung transplants and ethics surrounding the issue.
	Links to Destinations and Employability	Related to the following careers: Food Technician Dietitian	Related to the following careers: Stem Cell research	Related to the following careers: Endocrinologist Dietitian Doctor	Related to the following careers: Botonist	Related to the following careers: Doctor Cardiologist Sport science
	Enrichment Opportunities offered or developed	N/A	Potential visit to The Huntarian Museum.	N/A	Potential visit to Kew Gardens,	Potential visit to / virtual tour/ video on Body works exhibition.

Subject group	Faculty	Science
	Subject	Chemistry

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 10	Unit title	**C2.1 Atom Again**	**C2.2 Chemical Calculations**	**C2.3 Metals and Electrolysis**	**C2.4 Fuels**	**C2.5 How much/How fast**
	Subject Knowledge introduced / developed / revised	**Developed:** Structure of the atom, including subatomic particles and electronic configuration. Isotopes. Layout of the periodic table. **Revised:** Structure of atom, isotopes, periodic table.	**Introduced:**Calcuating empirical formulae and calculating moles. **Developed**: The conservation of mass. Balancing equations. Conversions between units. **Revised**: Writing word and balanced equations.	**Introduced**: Writing half equations. How to carry out electrolysis and explaining the movement of ions and formation of products at the electodes. Designing life cycle assessments for products and the impact this has on sustainability. **Developed**: Redox reactions with a new focus on movement of electrons. Different extraction methods and how they relate to the reactivity series. **Revised**: The reactivity series. Recycling.	**Introduced**: The structures and properties of alkanes and alkenes. The process and justification for both cracking and polymerisation. **Developed**: Combustionand the impacts on the environment. Fractional distillation and the properties and uses of the fractions. **Revised**: The formulae of hydrocarbons. The composition of both the early and current atmosphere. Climate change.	**Introduced**: Endothermic and exothermic reactions, including drawing and interpreting energy level diagrams. Explaining and calcualting bond enthalpies. Activation energy and its role in chemical reations. **Developed**: Rates of reaction and the factors which can speed up a reaction. **Revised:** Using terms reactants and products correctly. Balancing equations.
	Skills developed / extended / used	**Developed:** Data interpretation of graphs. Analysisng cooling curves/heating curves.	**Introduced:**Calcuating empirical formulae and calculating moles. **Developed**: Writing word and symbol equations. Balancing equations. Rounding and using multi step calculations. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced:** Practical activities - Electrolysis. **Developed**: Data analysis and interpretation of graphical data. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced:** Practical activities - combustion of fuels. **Developed**: Data analysis and interpretation of graphical data. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced:** Practical activities - surface area, disappearing cross, temperature, catalysts **Developed**: Data analysis and interpretation of graphical data, including drawing tangents and calculating gradients. **Used**: Literacy and numeracy. Identifying and managing risks.
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Group work. Peer assessment.	Group work. Peer assessment.	Practical activities. Group/team work Identifying and managing risks.	Practical activities. Group/team work Identifying and managing risks.	Practical activities. Group/team work Identifying and managing risks.
	Links to Destinations and Employability	Reinforcement of mathematical skills.	Reinforcement of mathematical skills.			
	Enrichment Opportunities offered or developed	Research into how the model of the atom and our understanding have changed over time.	Practical investigation skills. Independent research	Practical investigation skills Independent research	Practical investigation skills Independent research	Practical investigation skills Independent research

Subject group	Faculty	Science
	Subject	Physics

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 10	Unit title	**P2.1 Matter**	**P2.2 Radioactivity**	**P2.3 Electromagnetism**	**P2.4 Kinetic Theory**	**P2.5 Forces**
	Subject Knowledge introduced / developed / revised	**Introduced:** F = kx The spring equation. **Developed**: Hooke's Law and elasticity. **Revised**: The effects of forces.	**Introduced:** Types of Radioactive decay and ionising radiation. Calculating half life and interpreting half life graphs. Dangers and precautions of radioactive exposure. Background radiation. **Developed**: Development of our understanding of the structure of the atom. **Revised**: The structure of the atom, including subatomic particles.	**Introduced**: Earths magentic field and magnets. Motor Effect. Flemming's left hand rule. Unit of charge in Coulombs. **Developed**: Making and using electromagnets and how to change the strength of an electormagnet. Step-up and step- down transformers. Units for charge and potential difference. **Revised**: Simple magnets and the poles. Attraction and repulsion.	**Introduced:** Calcualting specific heat capacity. Measuring temperature using Kelvin. Understanding of specific latent heat. Investigating and comparing density of differently shaped objects. **Developed:** Rearranging equations. Density of irregular objects. **Revised**: States of matter and coling curves.	**Introduced:** Analysing motion graphs. Newton's 2nd and 3rd laws. Stopping distances and factors which affect it. Momentum and circular motion. **Developed:** Calcuating KE, GPE, work & power. Calculating resultant force. **Revised:** Labelling forces and their effects.
	Skills developed / extended / used	**Introduced**:practical activities - Hooke's Law. **Developed**: Data analysis and interpretation of graphical data. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced**:practical activities - radiation demonstration. **Developed**: Data analysis and interpretation of graphical data. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced**:practical activities - making an electromagnet. **Developed**: Data analysis and interpretation of graphical data. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced:** practical activities - Density, Specific heat capacity, latent heat group/team work **Introduced:**Data analysis and interpretation of graphical data. Rearrangement of equation. **Used**: Literacy and numeracy. Identifying and managing risks.	**Introduced:** practical activities - F=ma group/team work **Introduced:**Data analysis and interpretation of graphical data. Rearrangement of equation. **Used**: Literacy and numeracy. Identifying and managing risks.
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Practical activities. Group/team work. Identifying and managing risks.	Explanation of radioactive accidents and their effects. Discussions of nuclear disasters.	Practical activities. Group/team work Identifying and managing risks.	Practical activities. Group/team work Identifying and managing risks.	Practical activities. Group/team work Identifying and managing risks.
	Links to 'Destinations and Employability'	Reinforcement of mathematical skills. Related to the following career: Engineering, Car Mechanic	Reinforcement of mathematical skills. Related to the following careers: Medical imaging Treatment	National Grid	Reinforcement of mathematical skills.	Reinforcement of mathematical skills.
	Enrichment Opportunities offered or developed			AC/DC current wars. Video on Aurora Borealis from Earth and Space.		

Subject group	Faculty	Science
	Subject	Biology

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 11	Unit title	**B3.1 Key concepts, cells, and Genetics**	**B3.2 Health and Disease**	**B3.3 Evolution**	**B3.4 Plants**	**B3.5 Hormones**	**B3.6 Human Body**	**B3.7 Ecosystems**
	Subject Knowledge introduced / developed / revised	**Revised:** Structure of bacterial cells. Comparing eukaryotic/prokaryotic cells. Inheritance and interpreting genetic diagrams.The CNS including neurones and reflex arc. Using microscopes. The structure of DNA. The roles of organelles and structure of animal and plant cells.	**Revised:** Immunity and treatments of diseases including antibiotics. Calculating BMI and evaluating the impacts on health. Health and disease. The human body and systems.	**Revised:** Genetics and the role in selective breeding. Human evolution and the evidence. The theory of natural selection and evolution. Classification including specifically kingdoms. Drawing and interpretting punnett squares and pedigree charts. Inheritance and structure of DNA. Genetic and environmental variation.	**Revised:** Limiting factors of photosynthesis. Transpiration and translocation. The structures and roles of xylem and phloem. Structure of a leaf and the adaptations relating to photosynthesis. The equaition and role of photosynthesis.	**Revised:** The role of hormones and glands. The effects of hormones on metabolism, the menstrual cycle and diabetes. Symptoms and treatments of non-communicable diseases. Organ systems.	**Revised:** Aerobic and anaerobic respiration.The structures and roles of blood vessels. Gas exchange and the adaptations of the aveoli. Respiration as a life process. The strucure of the heart and lungs. Organ systems. The structure and roles of cells. The movement of molecules- specifically osmosis, diffusion and active transport.	**Revised:** The carbon cycle, water cycle, nitrogen cycle. Symbiotic relationships. Fieldwork techniques. Human impacts on biodiversity/ecosystems.Feeding relationships.
	Skills developed / extended / used	**Developed:** Using microscopes, drawing scientifically and calculating magnification, percentage change. Describing and explaining how to carry DNA extraction. **Used:** Literacy & numeracy skills.	**Developed:** Analysing and interpreting graphs. Calculating BMI.	**Developed:** Modelling. Group/team work including debating. **Extended:** Data analysis and interpretation of data represented graphically. **Used:** Literacy & numeracy.	**Developed:** Practical skills - core practical the effect of light intensity on the rate of photosynthesis. **Extended:** Data interpretion and analysis of data presented graphically. **Used:** Literacy and numeracy. Identifying and managing risks.	**Used:** practical activities group/team work risk assessment Data analysis and Interpretation	**Developed:** Practical skills - dissections. **Extended:** Data interpretion and data analysis. **Used:** Literacy and numeracy. Identifying and managing risks.	**Developed:** Selecting appropraite fieldwork techniques and carrying them out safely. **Extended:** Data analysis and interpretation of data presented graphically. Debating global warming/cliamte change. **Used:** Literacy and Numeracy. Identifying and managing risks.
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	History of the development of microscopes.	Discussion on the impacts and implications of new diseases Working collaboratively with peers to complete investigations. Discuss and evaluate the treatments currently available and the development of new medicine.	Disussions surrounding creation vs evolution and the view points of religious groups. Use of DNA/CRISPR/ Gene Technology and the view points of religious groups. Gene editing and the view points of religious groups. The work and importance of The Human Genome Project.	Discussing the use of scientific techniques for financial gain and how farmers can enhance crop growth. Working collaboratively with peers to complete investigations	Ethical debates on topics such as contraception and fertility treatments. Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations. Discussions on ethics of using living organisms for experiments.	Ethical debates on understanding the human impacts on biodiversity and the impact on the environment.
	Links to 'Destinations and Employability'	Related to the following careers: Microbiology Biochemistry Lab technician Biochemical Scientist	Links to NHS careers.	Related to the following careers: Geneticist Medicine Paeleontologist Archeologist	Related to the following careers: Botonist Environmentalist Horticultoralist	Related to the following careers: Endocrinologist Biomedical science Medicine	Related to the following careers: Cardiologist Sports science Physiotherapist Anatomist	Related to the following careers: Ecologist Environmental science Climate scientist
	Enrichment Opportunities offered or developed							

Subject group	Faculty	Science
	Subject	Chemistry

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 11	Unit title	**C3.1 Atomic Structure & Bonding**	**C3.2 Chemical Changes**	**C3.3 Extracting Metal**	**C3.4 Periodic Table**	**C3.5 Rates of Energy**	**C3.6 Fuels**
	Subject Knowledge introduced / developed / revised	**Revised:** The structure of the atom including the subatomic particles Isotopes and electronic configuration. The layout of the Periodic table. States of matter and cooling surves. Separating substances, including simple and fractional distillation and making water drinkable. Ionic and covalent bonding and the properties of the ionic and covalent compounds. Solubility rules.	**Revised:** Making salts and solutions. Calculating concentration. Titration techniques. Neutralisation including word and balanced equations. The pH scale and hydrogen concentration. Acids and alkalis. Indicators and their associated colour changes. Reactions of metals with acids. Calculating empirical formulae, moles. Conservation of mass and balancing equations.	**Revised:** Writing half equations. How to carry out electrolysis and explaining the movement of ions and formation of products at the electodes. Designing life cycle assessments for products and the impact this has on sustainability. Redox reactions with a new focus on movement of electrons. Different extraction methods and how they relate to the reactivity series. The reactivity series. Recycling.	**Revised:** The properties and reactions of groups in the periodic table. Electronic configuration. Calculating isotopic abundance & RFM.	**Revised:** Rates of reaction. Endothermic & exothermic reactions. Bond enthalpy, activation energy and combustion.	**Revised:** Alkanes and alkenes, cracking, polymerisation, combustion, fractional distillation, hydrocarbons, composition of atmopshere and climate change.
	Skills developed / extended / used	**Developed:** Exam and revision techniques. Data interpretation graphs cooling curves/heating curves. **Extended:** **Used:** Modelling, practical skills, group/team work.	**Developed:** Exam and revision techniques. Practical skills, data analysis and interpretation. **Extended:** **Used:** Writing word and symbol equations, balancing equations, rounding, multi step calculations.	**Introduced:** Practical activities - Electrolysis. **Developed:** Data analysis and interpretation of graphical data. **Used:** Literacy and numeracy. Identifying and managing risks.	**Developed:** Exam and revision techniques. **Extended:** **Used:** Literacy and numeracy. Identifying and managing risks.	**Developed:** Exam and revision techniques. Practical activities - surface area, disappearing cross, temperature, catalysts. group/team work. Risk assessment. Data analysis and Interpretation/ deteriming gradients. **Extended:** **Used:** Literacy and numeracy. Identifying and managing risks.	**Developed:** Exam and revision techniques. Practical activities, group/team work, risk assessment, Data analysis and Interpretation. **Extended:** **Used:**
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Group/team work. Practical activities. Data analysis and Interpretation.	Group/team work. Practical activities. Data analysis and Interpretation.	Group/team work. Practical activities. Data analysis and Interpretation.			Practical activities. Group/team work. Risk assessment.
	Links to 'Destinations and Employability'	N/A	Reinforcement of mathematical skills. Practical investigation skills. Independent research	Reinforcement of mathematical skills. Practical investigation skills. Independent research	Reinforcement of mathematical skills.	Reinforcement of mathematical skills.	N/A
	Enrichment Opportunities offered or developed						Practical investigation skills. Independent research.

Subject group	Faculty	Science
	Subject	Physics

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 11	Unit title	**P3.1 Waves and Energy**	**P3.2 Forces and Radioactivity**	**P3.3 Electricity**	**P3.4 Forces doing Work**	**P3.5 Magnetism**	**P3.6 Matter**
	Subject Knowledge introduced / developed / revised	**Revised:** : Properties of waves, comparing and calculating wavelength and frequency. The EM spectrum, including the dangers and uses. Calculating wave speed, distance and time. Using correct units. Power, current, efficiency, time, voltage and the associated equations. National Grid and the transmission of electricity. Rearrangment of equations. Using and converting between units. Calcuating efficiency as percentages.	**Revised:** Analasing motion graphs. Newton's 2nd and 3rd laws. Stopping distances and factors which affect it. Momentum and circular motion. Calcuating KE, GPE, work & power. Calculating resultant force. Labelling forces and their effects. Types of Radioactive decay and ionising radiation. Calculating half life and interpreting half life graphs. Dangers and precautions of radioactive exposure. Background radiation. Development of our understanding of the structure of the atom.The structure of the atom, including subatomic particles.	**Revised:** Resistance and its associate calcualtions. Knowledge and application of ohms law. Energy. Knowledge and application of equations relating to power, current, voltage and time. Rearranging equations. Circuit symbols. Series and parallel circuits.	**Revised:** Analasing motion graphs. Newton's 2nd and 3rd laws. Stopping distances and factors which affect it. Momentum and circular motion. Calcuating KE, GPE, work & power. Calculating resultant force. Labelling forces and their effects.	**Revised:** Earth's magentic field and magnets. Motor Effect. Flemming's left hand rule. Unit of charge in Coulombs. Making and using electromagnets and how to change the strength of an electormagnet. Step-up and step- down transformers. Units for charge and potential difference. Simple magnets and the poles. Attraction and repulsion.	**Revised:** F = kx The spring equation. Hooke's Law and elasticity. The effects of forces. Calcualting specific heat capacity. Measuring temperature using Kelvin. Understanding of specific latent heat. Investigating and comparing density of regular objects. Rearranging equations. Density of irregular objects. States of matter and coling curves.
	Skills developed / extended / used	**Developed:** Mathematical skills such as using and converting between units. Calcuating efficiency as percentages. Mathematical skills including conversions between nm,m,um which link to high frequency and energy levels. **Extended:** Combining equations together. Rearrangment of equations. **Used:** Literacy & numeracy	**Developed:** **Extended:** Mathematical skills, Exam technique, working collaboratively, **Used:** Using scientific language, data analysis	**Developed:** Trouble shooting circuits **Extended:** Mathematical skills, Exam technique, setting up circuits **Used:** Using scientific language, data analysis	**Developed:** **Extended:** Mathematical skills, Exam technique, carrying out practicals safety **Used:** Using scientific language, Recording observation clearly and accurately, data analysis	**Developed:** **Extended:** Mathematical skills, Exam technique, practical skills **Used:** Using scientific language, data analysis	**Developed:** **Extended:** Mathematical skills, Exam technique, practical skills **Used:** Using scientific language, data analysis
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations	Working collaboratively with peers to complete investigations
	Links to 'Destinations and Employability'	Reinforcement of mathematical and problem solving skills.	Reinforcement of mathematical and problem solving skills.	Reinforcement of mathematical and problem solving skills.	Reinforcement of mathematical and problem solving skills.	Reinforcement of mathematical and problem solving skills.	Reinforcement of mathematical and problem solving skills.
	Enrichment Opportunities offered or developed						

Subject group	Faculty	Science
	Subject	Biology

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 1
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 12	Unit title	**Topic 1 : Biological Molecules**	**Topic 4: Exchange and transport**	**Topic 2: Cells, Virus, and Reproduction**	**Topic 3 Classification and Biodiversity**	**Topic 10: Ecosystems**	
	Subject Knowledge introduced / Developed: / revised	**Introduced**: Monosaccharides, Disaccharides, Polysaccharides, Triglycerides, Phospholipids, Strucuture of proteins, Collegen, and Haemoglobin, Inorganic ions, water structure and properties **Developed:** DNA structure, Protein Synthesis, enzymes, Food Tests	**Introduced**: Cell surface membrane, Facilitated diffusion, structure of animal gas exchange systems, cardiac cycle, diseases of the heart, tissue fluid, lymphatic system **Developed:** surface area to volume ratio, osmosis, diffusion, active transport, gas exchange, circulation, role of blood, the heart, blood vessels, gas exchange in plant, plant transport system	**Introduced:** graticules and scales, viruses, viral infections, meiosis, sexual reproduction, **Developed:** organisation and microscopy, mitosis, R: animal cells, plant cells, prokaryotic cells	**Introduced:** limitations of species, ID Techniques, Biodiveristy at genetic level, insitu/ex situ conservation **Developed:** classification. 3 domains, natural selection and evolution, Biodiversity,	**Introduced:** Standard deviation, T Test, correlation and Spearman Rank, **Developed:** biotic and abiotic factors, Ecological techniques, Recycling of nutrients, Ntirogen cycle, Human influence on Biodiversity **Revised**: Ecosystem key terms,	
	Skills Developed: / extended / used	**Developed:** Core practical - enzymes **Extended:** Practical Skills **Used:** Risk Assessments Data Analysis and Interpretation	**Developed:** Core practical **Extended:** Practical Skills, Surface area to volume ratio **Used:** Risk Assessments Data Analysis and Interpretation	**Developed:** Core practical - **Extended:** Practical Skills **Used:** Risk Assessments Data Analysis and Interpretation	**Developed:** core practical, species index **Extended:** Practical Skills **Used:** Risk Assessments Data Analysis and Interpretation	**Developed:** Core practical, Standard deviation, T Test, correlation and Spearman Rank, **Extended:** Practical Skills **Used:** Risk Assessments Data Analysis and Interpretation	
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	N/A	blood doping debate variation in people	variation in people	use of technology to determine species appreciate the value of conservation variation in organisms	ethical debates understanding human impact on biodiversity and the planet	
	Links to 'Destinations and Employability'	Biochemical scientist food scientist	cardiologist medicine botanist clinical scientist	virologist medicine	geneticist zoologist conservationist	ecologist environmental science climate scientist	
	Enrichment Opportunities offered or Developed:	university trips practical techniques	dissection of heart, gas exchange systems hunterian museum	university trips wellcome museum	trip to colchester zoo natural history museum horniman museum grant museum of zoology	fieldwork (gunners park, east beach, danbury lakes)	

Year 13		Term 1	Term 2	Term 3	Term 4	Term 5	Term 1
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
	Unit title	**Topic 5: Energy for Biological Processes**	**Topic 6 Microbiology and Pathogens**	**Topic 7: Modern Genetics**	**Topic 8: Origins of Genetic Variation**	**Topic 9: Control systems**	
	Subject Knowledge introduced / Developed: / revised	**Introduced:** glycloysis, link reaction and kreb cycle, oxidative phosphorylation, photosynthetic pigments **Developed:** aerobic and anaerobic respiration, photosynthesis, structure of ATP	**Introduced:** microbial techniques, pathogenic agents, endemic diseases **Developed:** bacteria as pathogens, actions of antibiotics, response to infection	**Introduced:** gene sequencing, factors affecting gene expression, **Developed:** stem cells, gene technology, transgenics, DNA	**Introduced:** dihybrid crosses, gene linkage, gene pools, bottle neck and founder effect **Developed:** Genetic variation, monohybrid crosses sex linkage and disease	**Introduced:** endotherms, sympathetic/parasympathetic systems, action potential, excitatory/inhibitory potentials **Developed:** homeostasis, respiration rates, hormones, chemical control in plants, kidney, osmoregulation, CNS, synapses, effect of drugs, structure of the eye, heart rate	
	Skills Developed: / extended / used	**Developed:** Vo2 calculations, volume of a cylinder **Extended:** Core practical, Practical Skills **Used:** Risk Assessments, Data Analysis and Interpretation	**Developed:** Core practicals **Extended:** Practical Skills **Used:** Risk Assessments, Data Analysis and Interpretation	**Developed:** Core practicals **Extended:** Practical Skills **Used:** Risk Assessments, Data Analysis and Interpretation	**Developed:** Core practical, Hardy Weinberg equation **Extended:** Practical Skills **Used:** Data Analysis and Interpretation, Risk Assessments	**Developed:** Core practical **Extended:** Practical Skills **Used:** Risk Assessments Data Analysis and Interpretation	
	Opportunities to develop 'Respectful attitudes' / Indusion and Diversity	N/A	cultural beliefs when dealing with infection and disease	advantages/disadvantages of gene sequencing, stem cell research, development and use fo human genome, variation in people ethical debates	ethical debates development of inherited diseases variation in people and other living organisms	ethical debates	
	Links to 'Destinations and Employability'	biochemist biomedical science	immunologist data analyst microbiologist biotechnologist	geneticist stem cell research forensic scientist	geneticist	endocrinologist opthalamist cardiologist	
	Enrichment Opportunities offered or Developed:	university trips	royal college of surgeon- hunterian museum	attendance to lectures by key scientists	university trips	dissection of eye, kidney wellcome museum	

Subject group	Faculty	Science
	Subject	Chemistry

Year 12		Unit 1	Unit 2	Unit 3 & 14	Unit 4	Unit 5	Unit 6
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
	Unit title	**Atomic Structure and the Periodic Table**	**Bonding and Structure.**	**Redox 1 & 2**	**Inorganic Chemistry & the Periodic Table**	**Formulae, Equations and Amount of Substance**	**Organic Chemistry 1**
	Subject Knowledge introduced / developed / revised	Introduced- Mass Spectrometry, Ionisation energies and the trends & Periodicity. Developed- Isotopes, Electronic Configuration. Revised- Structure of the atom.	Introduced- Ionic radii and ionic charge, isoelectronic ions, relationship between bond length and strength for covalent bonds, shapes of molecules and bond angles, intermolecular forces, anomalous properties of water, solvents Developed- Ionic bonding, electronic configuration and dot cross diagrams, metallic bonding, predicted Revised- Structure of the atom, formation of ions, physical properties of ionic compounds, giant lattices, allotropes of carbon	Introduced- Oxidation numbers, disproportionation, standard electrode potentials, standard conditions, calculate emf, redox titration. Developed- Formation of ions, oxidising and reducing agents, half & ionic equations Revised- Redox definitions	Introduced- Trends in solubility, patterns in thermal decomposition Developed- Trends in reactivity, flame tests, trends in melting and boiling temperatures, identification of ions. Revised- Trends in ionisation energies, reactions with group 2 elements	Introduced- Avogadro's constant, Ideal gas equation, acid-base reactions, making standard solutions Developed- Empirical formulae, use of indicators, titrations and their calculations, calculating moles Revised- Calculating RAM, RFM, atom economy & molar mass. Managing risks and hazards.	Introduced- Use of IUPAC, classification of reactions, isomerism. Radicals, electrophiles, nucleophiles, heterolytic fission. Mechanisms of reactions. Production and reactions of halogenoalkanes, Developed- Environmental impacts of burning fossil fuels and methods of limitations. Reactions off alkenes, alkanes & alcohol. Revised- Hydrocarbons & homologous series. Combustions of fuels,
	Skills developed / extended / used	Developed- Modelling, using logarithms. Extended- Calculating RAM from isotopic composition data. Used- Graphical analysis, probability to calcualte peak heights.	Developed- Modelling, using logarithms, plotting data on graphs. Extended- Calculating RAM from isotopic composition data. Used- Graphical analysis, probability to calcualte peak heights.	Developed- Carrying out practical investigations, including CPACs. Extended- Carrying out practical investigations, including CPACs. Used- Application of key language.	Developed- Carrying out practical investigations. Extended- Carrying out practical investigations, including CPACs. Used- Application of key language, data analysis.	Developed- Converting units, rearranging equations, Extended- Carrying out practical investigations, including CPACs. Identifiying and planning to manage risks and hazards. Used- Application of key language, data analysis. Mathmatical skills.	Developed- Modelling. Extended- Carrying out practical investigations, including CPACs. Identifiying and planning to manage risks and hazards. Used- Application of key language, data analysis. Mathmatical skills.
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.
	Links to 'Destinations and Employability'	Mass spectrometry links to forensics.	N/A	E cells relate to batteries and industry.	N/A	Industrial contexts used.	Industrial contexts used. Environmental impacts of human activity and the carers which support this.
	Enrichment Opportunities offered or developed	Develop practical skills including use of hand-held spectroscopes. Using new equipment and techniques.	N/A	Develop practical skills including use of titration equipment and building e cells. Using new equipment and techniques.	N/A	Develop practical skills including use of titration equipment and making standard solutions.Using new equipment and techniques.	Develop practical skills including cracking, extracting limonene, dehydrating alcohol. Using new equipment and techniques.

Year 13

	Unit 7 & 19	Unit 8 & 13	Unit 9 & 16	Unit 10 & 11
	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Unit title	Modern analytical techniques 1 & 2.	Energetics 1 & 2	Kinetics 1 & 2	Equilibirum 1 & 2
Subject Knowledge introduced / developed / revised	Introduced- Infrared spectroscopy & analysing the data produced. NMR techniques, uses and data analysis. Liquid chromatography. Developed- Mass Spectrometry & analysing the data produced. Use mass spectra data to deduce organic compound structure. Revised- Chromatography and calculating Rf value.	Introduced- Hess' Law. Standard enthalpy of combustion, formation, neutralisation amd reaction. Lattice energy and Born-Haber cycles. Entropy and changes during reactions. Developed- Combustion of fuels and types of reaction. Calculating bond enthalpy. Energy level diagrams. Standard enthalpy. Polarisation of ions. Revised- Standard conditions. Calculating energy transferred.	Introduced- Maxwell- Boltzmann distribution of molecular energies. Orders with respect to a substance in rate equation. Deducing rate-determining steps. Developed- Collision theory and activation energy. Role of catalysts. Revised- Benefits of using catalysis in industrial reactions.	Introduced- Kc for homogeneous and heterogeneous. Kp for homogeneous and heterogeneous, in terms of equilibrium and partial pressures. Calculate equilibrium constant for both endothermic and exothermic reactions. Developed- Reversible reactions and dynamic equilibrium. Effect of change in temperature, pressure and concentration or pressure on a homogeneous system in equilibrium. Revised- Endothermic and exothermic reactions.
Skills developed / extended / used	Developed- Practical skills. Analysing fragmentation patterns and peaks in mass/infrared spectra spectra. Extended- Analysisng molecular ion peaks. Used- Graphical analysis, probability to calcualte peak heights.	Developed- Practical skills. Drawing and analysing energy level diagrams and cycles. Extended- Practical use of calorimetry. Carrying out practical investigations, including CPACs Used- Rearranging equations, conversion of units.	Developed- Practical skills. Calculating rate of reaction and using therate equation. Extended- Graphical analysis including drawing tangents on graphs and calculating rate of reaction. Using powers correctly. Carrying out practical investigations, including CPACs Used- Rearranging equations, conversion of units.	Developed- Practical skills. Extended- Graphical analysis including drawing tangents on graphs and calculating rate of reaction. Using powers correctly. Carrying out practical investigations, including CPACs Used- Algebraic expression for the equiliirum constant.
Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.
Links to 'Destinations and Employability'	Mass spectrometry links to forensic science and chemical analysis.	Oportunites to consider how chemists evaluate theoretical models by comparing real and ideal properites of chemicals. Showing students how chemists use formal, abstract thinking to answer fundmental questions about the stability of chemicals and direction of chemical change.	N/A	N/A
Enrichment Opportunities offered or developed	Further research into the uses of the techniques such as testing for drugs in blood and urine forensically and in sport.			

	Unit 12	Unit 15	Unit 17	Unit 18
	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Unit title	Acid- base equilibria	Transition Metals	Organic Chemistry 2	Organic Chemistry 3
Subject Knowledge introduced / developed / revised	Introduced- BrØnsted- Lowry conjugate acid- base pairs. Calculating pH from hydrogen ion concentration. Comparing weak and strong acids. Deduce the acid dissociation constant for a week acid and carry out relevant calculations. Ionic product of water and using this to calculate pH of strong base. Explaining the action of buffer solutions. Developed- Reversible reactions and dynamic equilibrium. Interpretation of titration curves. Revised- Enthalpy change of neutralisation.	Introduced- Ligands. Developed- Variable oxidation states. Interpretation of titration curves. The colour changes in transition metal ions. Isomerisms. Catalysts and catalytic converters. Revised- Electronic configurations of atoms and ions. Shapes of molecules. Redox reactions and e cell values. Ionic equations.	Introduced- Chirality. Understanding the nature of a racemic mixture. Carbonyl compounds. Carboxylic acids. Developed- Isomerisms. Reaction mechanisms. Functional groups. Revised- Electronic configurations of atoms and ions. Shapes of molecules. Redox reactions and e cell values. Ionic equations.	Introduced- Arenes- benzenes. Amines, amides amino acids and proteins. Organic synthesis. Grignard reagents. Developed- Isomerisms. Reaction mechanisms. Functional groups. Use and development practical techniques. Revised- Electronic configurations of atoms and ions. Shapes of molecules. Redox reactions and e cell values. Ionic equations.
Skills developed / extended / used	Developed- Practical skills. Extended- Graphical analysis. Rearrangement of calculations. Carrying out practical investigations, including CPAC. Used- Rearranging equations, conversion of units.	Developed- Practical skills. Extended- Graphical analysis. Investigating geometry of different transition metal complexes. Used- Rearranging equations, conversion of units.	Developed- Practical skills. Extended- Graphical analysis. Rearrangement of calculations. Carrying out practical investigations, including CPAC. Used- Rearranging equations, conversion of units.	Developed- Practical skills. Extended- Graphical analysis. Rearrangement of calculations. Carrying out practical investigations, including CPAC. Used- Rearranging equations, conversion of units.
Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.	Collaborative working. Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data.
Links to 'Destinations and Employability'	N/A	Developing an appreciation that catalyst research is a frontier area, and one which provides an opportunity to show how the scientific community reports and validates new knowledge.	N/A	N/A
Enrichment Opportunities offered or developed	Opportunity to consider how the historical development of theories explaining acid and base behaviour show that scientific ideas change as a result of new evidence and fresh thinking.			

Subject group	Faculty	Science
	Subject	Physics

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
Year 12	Unit title	**12.1: Mathematic skills**	**12.2: Mechanics**	**12.3: Electricity**	**12.4: Materials**	**12.5.1: Waves**	**12.5.2: Quantum**
	Subject Knowledge introduced / developed / revised	**Introduced** - **Developed** -Rearranging equations, Trigonometry **Revised** - Mathematical processes	**Introduced** - Equations of motion, moments, Projectile motion **Developed** -Forces and motion, Newton's Laws **Revised** - GCSE Forces and motion topic	**Introduced** - Circuit rules, Potential Dividers, drift velocity, resistivity, Internal resistance, EMF **Developed** -Total combined resistance **Revised** - GCSE Electricity topic	**Introduced** - Stress, Strain, Young Modulus, Material properties definitions, viscousity **Developed** -Spring equation, Work done **Revised** - GCSE Matter	**Introduced** - Superposition, interference, Youngs double slit experiment, Polarisation **Developed** -Wave properties **Revised** - GCSE Waves	**Introduced** - Quantum Physics, **Developed** - Atomic model, wave equation **Revised** -
	Skills developed / extended / used	**Developed** - Algebraic and graph skills **Extended** - Rearrnging equations **Used** - Numeracy skills	**Developed** - Analysing graph skills, practical skills **Extended** - Rearrnging equations **Used** - Numeracy skills	**Developed** - Constructing circuits **Extended** - Rearrnging equations, trouble shooting circuits, Result analysis **Used** - Numeracy skills	**Developed** - Investigation design, analysis with the aid of IT **Extended** - Result analysis, practical skills **Used** - Numeracy skills	**Developed** - Algebraic and graph skills **Extended** - Rearrnging equations **Used** - Numeracy skills	**Developed** - Algebraic and graph skills **Extended** - Rearrnging equations **Used** - Numeracy skills
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	N/A	Working collaboratively in class investigations	Working collaboratively in class investigations	Working collaboratively in class investigations	Working collaboratively in class investigations	Working collaboratively in class investigations, Wave-Particle debate
	Links to 'Destinations and Employability'	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data
	Enrichment Opportunities offered or developed						

Year 13		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
		Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage	Curriculum / Syllabus coverage
	Unit title	**Electric Fields and Capacitors**	**Electromagnetism**	**Astrophysics**	**Further Mechanics**	**Nuclear & Particle Physics**	**Nuclear Radiation**	**Oscillations**	**Thermodynamics**
	Subject Knowledge introduced / developped / revised	**Introduced**- Electric Field and Capacitors/Capacitance **Developed**- AS Electricity unit **Revised**- '5 rules of Electricity'	**Introduced**- F=BIL, Faraday's Law, Lenz's Law **Developed**- AS Electricity **Revised**- GCSE Electromagnetism	**Introduced**- Stars, Thermodynamics of stars, Observation, Cosmology, Gravitation **Developed**- Mechanics, Circular Motion **Revised** - Life cycle of star (Separate students only)	**Introduced**- Circular Motion, Momentum **Developed and Revised**- Previous AS mechanics content	**Introduced**- Subatomic Particles, Conservation rules **Developed**- Atomic models **Revised**- Mechanics	**Introduced**- Energy within decays **Developed**- Subatomic particles **Revised**- Types of radioactive decay	**Introduced**- Simple Harmonic Motion **Developed**- Waves theory **Revised**- Mechanics	**Introduced**- Gas Laws, Thermodynamic Laws, **Developed**- Latent heat, Specific heat capacity **Revised**- Particle models of matter
	skills developed / extended / used	**Developed**- Logarithmic analysis **Extended**- CPAC skills **Used**- Basic practical skills	**Developed**- Constructing circuits **Extended**- CPAC skills **Used**- Basic practical skills	**Developed**- Researching and presenting information **Extended**- CPAC skills **Used**- Basic practical skills	**Developed** - Analysing graph skills, practical skills **Extended** - Rearrnging equations **Used** - Numeracy skills	**Developed**- Researching and creating hazard information **Extended**- CPAC skills **Used**- Basic practical skills	**Developed**- Assessing risk in practicals **Extended**- CPAC skills **Used**- Basic practical skills	**Developed** - Analysing graph skills, practical skills **Extended** - Rearrnging equations **Used** - Numeracy skills	**Developed** - Investigation design, analysis with the aid of IT **Extended** - Result analysis, practical skills **Used** - Numeracy skills
	Opportunities to develop 'Respectful attitudes' / Inclusion and Diversity	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills	Collaborative practical skills
	Links to Destinations and Employability'	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data	Developing early skills for employment - literacy, critical thinking and analysis, recording and analysing data
	Enrichment Opportunities offered or developed								