

Curriculum Intent

The Science curriculum at My Online Schooling is designed to allow pupils to acquire and develop their understanding of scientific concepts. It allows ample opportunity for building scientific skills such as processing data, making observations, planning investigations, making predictions, and communicating. Our curriculum incorporates mathematics and literacy throughout.

By the end of Key Stage 3, pupils will have learnt a range of Biology, Chemistry and Physics topics, covering the English National Curriculum. At Key Stage 4, pupils can progress further with each of the Sciences and have the opportunity to study Astronomy too. We also offer Biology, Chemistry and Physics at Key Stage 5. As well as confidence in scientific knowledge and skills, pupils will have also developed curiosity about the world around them and be aware of the many pathways open to them should they wish to pursue further education or a career in Science.

Our curriculum promotes diversity and international mindedness, and we are working to build further opportunities around this into our Schemes of Work.

Implementation

The sequence of teaching allows pupils to acquire basic scientific knowledge in Key Stage 3 before progressing onto more complex and often abstract concepts in Key Stages 4 and 5. This can be seen in the list of topics outlined below.

The development of practical Science skills is more challenging in an online setting, but we challenge this by using simulations, videos, and safe at-home practicals. Through this, our pupils develop an understanding of why certain steps are taken and not just how to carry out each step.

Key Stage 3

Science	
Year 7	Cells and Organisation, Reproduction in Animals, Reproduction in Plants, Interdependence, Classifying Materials, Pure and Impure Substances, Chemical Reactions, Energy, Electricity, Forces and Space
Year 8	Food and Digestion, Respiration, Microbes and Disease, Ecological Relationships, Elements, Compounds and Mixtures, Chemical Reactions, Rocks and Weathering, Magnets and Electromagnets, Light, Sound and Hearing, Heat
Year 9	Cells to Systems, Photosynthesis, Genetics and Evolution, Chemical Reactions, Materials, The Earth and Atmosphere, Physical Changes, Space, Energy, Forces and Motion, Electricity.

Key Stage 4

Biology	
Year 10	Variety of Living Organisms, Cell Structure, Biological Molecules, Movement of Substances, Nutrition, Respiration, Gas Exchange, Transport, Excretion, Coordination and Response, Sampling, Feeding Relationships, Ecological Cycles, Human Influences on the Environment
Year 11	Reproduction in Plants and Animals, Inheritance, Protein Synthesis, Natural Selection, Food Production, Genetic Modification, Cloning, Fish Farming

Chemistry	
Year 10	States of Matter, Elements, Compounds and Mixtures, Atomic Structure, Periodic Table, Chemical Calculations, Bonding, Electrolysis, Alkali Metals, Halogens, Gases in the Atmosphere, Reactivity Series, Extraction of Metals, Acids, Alkalis, Titrations, Salt Preparations, Chemical Tests
Year 11	Energetics, Rates of Reaction, Reversible Reactions, Equilibria, Alkanes, Alkenes, Alcohols, Carboxylic Acids, Esters, Polymers, Crude Oil, Cracking

Physics	
Year 10	Forces, Motion, Momentum, Electricity, The Electromagnetic Spectrum, Light and Sound, Energy Transfers, Work and Power, Energy Resources, Motion in the Universe, Stellar Evolution, Cosmology
Year 11	Density and Pressure, Changes of State, Ideal Gas Molecules, Magnetism, Electromagnetism, Radioactivity, Fission and Fusion

Astronomy	
Year 10	Planet Earth, Celestial Observations, The Lunar Disk, Exploring the Moon, Exploring the Solar System, Solar System Observations, Early Models of the Solar System, Planetary Motion and Gravity, Solar Astronomy, The Earth-Sun-Moon System, Time and the Earth-Moon System
Year 11	Formation of Planetary Systems, Exploring Starlight, Stellar Evolution, Our Place in the Galaxy, Cosmology

Key Stage 5

Biology	
Year 12	AS Level: Biological Molecules, Cells, Viruses, Reproduction, Classification, Biodiversity, Exchange, Transport
Year 13	A Level: Energy for Biological Processes, Microbiology and Pathogens, Modern Genetics, Origins of Genetic Variation, Control Systems, Ecosystems

Chemistry	
Year 12	AS Level: Atomic Structure, Periodic Table, Bonding, Redox, Inorganic Chemistry, Formulae, Amount of Substance, Organic Chemistry, Energetics
Year 13	A Level: Equilibrium, Energetics, Redox, Transition Metals, Kinetics, Organic Chemistry, Analytical Techniques
Physics	
Year 12	AS Level: Units, Equations, Mechanics, Materials, Electricity, Light
Year 13	A Level: Mechanics, Fields, Nuclear Radiation, Thermodynamics, Space, Particles, Oscillations

Impact

Key Stage 4

Biology		
Exam board	Pearson Edexcel	
Structure	Multiple choice, essay, closed short answer, open response	
International GCSE Biology (4BI1)	Paper 1 <ul style="list-style-type: none"> • 2 hours • 61.1% of qualification Paper 2 <ul style="list-style-type: none"> • 1 hour 15 minutes • 38.9% of qualification 	<ol style="list-style-type: none"> 1. The Nature and Variety of Living Organisms 2. Structure and Function of Living Organisms 3. Reproduction and Inheritance 4. Ecology and the Environment 5. Use of Biological Resources

Chemistry		
Exam board	Pearson Edexcel	
Structure	Multiple choice, essay, closed short answer, open response	
International GCSE Chemistry (4CH1)	Paper 1 <ul style="list-style-type: none"> • 2 hours • 61.1% of qualification Paper 2 <ul style="list-style-type: none"> • 1 hour 15 minutes • 38.9% of qualification 	<ol style="list-style-type: none"> 1. Principles of Chemistry 2. Inorganic Chemistry 3. Physical Chemistry 4. Organic Chemistry

Physics	
Exam board	Pearson Edexcel
Structure	Multiple choice, essay, closed short answer, open response

International GCSE Physics (4PH1)	<p>Paper 1</p> <ul style="list-style-type: none"> • 2 hours • 61.1% of qualification <p>Paper 2</p> <ul style="list-style-type: none"> • 1 hour 15 minutes • 38.9% of qualification 	<ol style="list-style-type: none"> 1. Forces and Motion 2. Electricity 3. Waves 4. Energy Resources and Energy Transfers 5. Solids, Liquids and Gases 6. Magnetism and Electromagnetism 7. Radioactivity and Particles 8. Astrophysics
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Astronomy		
Exam board	Pearson Edexcel	
Structure	Multiple choice, essay, closed short answer, open response	
GCSE Astronomy (1AS0)	<p>Paper 1</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 50% of qualification <p>Paper 2</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 50% of qualification 	<ol style="list-style-type: none"> 1. Planet Earth 2. The Lunar Disk 3. The Earth-Moon-Sun System 4. Time and the Earth-Moon-Sun Cycles 5. Solar System Observation 6. Celestial Observation 7. Early Models of the Solar System 8. Planetary Motion and Gravity 9. Exploring the Moon 10. Solar Astronomy 11. Exploring the Solar System 12. Formation of Planetary Systems 13. Exploring Starlight 14. Stellar Evolution 15. Our Place in the Galaxy 16. Cosmology 17. Practical

Double Award Science		
Exam board	Pearson Edexcel	
Structure	Multiple choice, essay, closed short answer, open response	
International GCSE Double Award Science (4DS0)	<p>Paper 1 - Biology</p> <ul style="list-style-type: none"> • 2 hours • 33.3% of qualification <p>Paper 2 - Chemistry</p> <ul style="list-style-type: none"> • 2 hours • 33.3% of qualification <p>Paper 3 - Physics</p> <ul style="list-style-type: none"> • 2 hours • 33.3% of qualification 	<ol style="list-style-type: none"> 1. The Nature and Variety of Living Organisms 2. Structure and Function of Living Organisms 3. Reproduction and Inheritance 4. Ecology and the Environment 5. Use of Biological Resources 6. Principles of Chemistry 7. Inorganic Chemistry 8. Physical Chemistry 9. Organic Chemistry 10. Forces and Motion 11. Electricity 12. Waves 13. Energy Resources and Energy

		<p>Transfers</p> <ol style="list-style-type: none"> 14. Solids, Liquids and Gases 15. Magnetism and Electromagnetism 16. Radioactivity and Particles 17. Astrophysics
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Key Stage 5

Biology		
Exam board	Pearson Edexcel	
Structure	Multiple-choice, short-answer, calculations, extended and open-response questions	
International A Level Biology B (9BI0)	<p>Paper 1</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 2</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 4</p> <ul style="list-style-type: none"> • 2 hours 30 minutes • 40% of qualification <p>Practical Endorsement</p> <ul style="list-style-type: none"> • Does not contribute to the overall grade of the qualification 	<ol style="list-style-type: none"> 1. Biological Molecules 2. Cells, Viruses and Reproduction 3. Classification and Biodiversity 4. Exchange and Transport 5. Energy for Biological Processes 6. Microbiology and Pathogens 7. Modern Genetics 8. Origins of Genetic Variation 9. Control Systems 10. Ecosystems

Chemistry		
Exam board	Pearson Edexcel	
Structure	Multiple-choice, short-answer, calculations, extended and open-response questions	
International A Level Chemistry (9CHO)	<p>Paper 1</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 2</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 4</p> <ul style="list-style-type: none"> • 2 hours 30 minutes • 40% of qualification <p>Practical Endorsement</p> <ul style="list-style-type: none"> • Does not contribute to the overall grade of the qualification 	<ol style="list-style-type: none"> 1. Atomic Structure and the Periodic Table 2. Bonding and Structure 3. Redox I 4. Inorganic Chemistry and the Periodic Table 5. Formulae, Equations and Amounts of Substance 6. Organic Chemistry I 7. Modern Analytical Techniques I 8. Energetics I 9. Kinetics I 10. Equilibrium I 11. Equilibrium II 12. Acid-base Equilibria 13. Energetics II 14. Redox II

		<ul style="list-style-type: none"> 15. Transition Metals 16. Kinetics II 17. Organic Chemistry II 18. Organic Chemistry III 19. Modern Analytical Technique II
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Physics		
Exam board	Pearson Edexcel	
Structure	Multiple-choice, short-answer, calculations, extended and open-response questions	
International A Level Physics (9PH0)	<p>Paper 1</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 2</p> <ul style="list-style-type: none"> • 1 hour 45 minutes • 30% of qualification <p>Paper 4</p> <ul style="list-style-type: none"> • 2 hours 30 minutes • 40% of qualification <p>Practical Endorsement</p> <ul style="list-style-type: none"> • Does not contribute to the overall grade of the qualification 	<ul style="list-style-type: none"> 1. Working as a Physicist 2. Mechanics 3. Electric Circuits 4. Materials 5. Waves and Particle Nature of Light 6. Further Mechanics 7. Electric and Magnetic Fields 8. Nuclear and Particle Physics 9. Thermodynamics 10. Space 11. Nuclear Radiation 12. Gravitational Fields 13. Oscillations

Department

Teacher	Role
Emma Crosby	Head of Science, Teacher of KS3 Science, KS4 Biology, KS5 Biology
Dave Adlem	Deputy Head of Science, Teacher of KS4 Physics, KS4 Astronomy, KS5 Physics
Alice Gillman	Teacher of KS3 Science, KS4 Chemistry, KS5 Chemistry
Beverley Jera	Teacher of KS3 Science, KS4 Biology
Farhana Rifai	Teacher of KS3 Science, KS4 Biology, KS4 Chemistry, KS5 Biology
Faryal Bano	Teacher of KS3 Science, KS4 Chemistry, KS5 Chemistry
Heba Jarrar	Teacher of KS4 Physics, KS5 Physics
Mariam Ahmed	Teacher of KS3 Science, KS4 Chemistry
Shummah Mahmood	Teacher of KS3 Science
Lauren Galligan	Teacher of KS3 Science, KS4 Biology, KS4 Chemistry

Zainab Yahya	Teacher of KS4 Biology
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