Eastbrook School

KS 4 Curriculum Summary

TRIPLE Science (OCR GATEWAY) 2018/2019

Year 9		
Autumn term	**Spring term**	**Summer term**
Topics and themes	**Topics and themes**	**Topics and themes**
CHEMISTRY (C1, C2, C3) The particle model Atomic structure Purity and separating mixtures Bonding Properties of materials Chemical reactions (incl. exo- and endothermic, neutralisation) Electrolysis	**BIOLOGY (B1, B2, B3)** Cell structure Microscopy DNA Enzymes Respiration Photosynthesis Transport across the membrane (diffusion, osmosis, active transport) Mitosis Stem cells Circulatory system Plant transport system (transpiration) Nervous system (the eye, the brain, reflex arc) The endocrine system Plant hormones Homeostasis (controlling body temperature, blood sugar, water balance) The kidney	**PHYSICS (P1, P2)** The model of the atom Density Specific heat capacity Specific latent heat Pressure: gas pressure and temperature, pressure and volume, atmospheric pressure, liquid and pressure Motion (distance, time, speed, acceleration, velocity, kinetic energy, vectors and scalars) Newton's laws (forces and interactions, free body diagrams, momentum, work and power) Stretching springs and other materials Gravitational field and potential energy Turning forces Simple machines Hydraulics
Maths skills: standard form, ratios, percentages, fractions, estimating, significant figures, frequency tables and charts, mean, order of magnitude, mathematical symbols, changing the subject of an equation, SI units, using units, converting between units, graph calculations, graph plotting, line of best fit, graph analysis, area and volume NB: maths skills for all sciences are addressed and revisited throughout KS4 studies frequently and time is allocated to assess and close the gap at the end of each term.		

Working scientifically: applications of science, methods, models, communication, asking scientific questions, hypothesis, planning an investigation, obtaining, presenting and interpreting data, errors and uncertainties.
NB: these skills are addressed throughout all KS4 studies, although time for assessment is allocated at the end of each term.

Useful websites

https://www.kerboodle.com/app
https://www.bbc.com/bitesize/examspecs/z92x7hv
https://www.bbc.com/bitesize/subjects/zrkw2hv
https://www.samlearning.com/
https://www.gcsepod.com/
https://www.youtube.com/ (free science lessons)
https://ocr.org.uk/qualifications/past-papers/

Other ways to support learning

Educational visits: Science Museum, Natural History Museum, Greenwich Observatory, Kew Gardens, Epping Forest, Imperial College, King's College, The Chase, Greenwich Maritime Museum

Year 10		
Autumn term	**Spring term**	**Summer term**
Topics and themes	**Topics and themes**	**Topics and themes**
BIOLOGY (B1, B2, B3) Cell structure Microscopy DNA Enzymes Respiration Photosynthesis NB: The above topics were covered in y.9 and will only be revised briefly this year) Transport across the membrane (diffusion, osmosis, active transport) Mitosis Stem cells Circulatory system Plant transport system (transpiration)	**CHEMISTRY (C6)** Fertilisers (Haber process, Contact process) Making ethanol Extracting metals Alloys Corrosion Different materials Organic chemistry Atmosphere (forming, pollution, climate change) Water for drinking **PHYSICS (P4, P5, P6)** Magnetism Uses of magnets: motors, generators, transformers, microphones and loudspeakers Waves	**BIOLOGY (B4, B5, B6)** Ecosystems: abiotic and biotic factors, competition, interdependence, pyramids of biomass, efficiency The carbon cycle The nitrogen cycle The water cycle Inheritance: variation, sexual and asexual reproduction Meiosis Genetics: alleles, dominant and recessive, mutations, history of genetics Evolution and natural selection Sampling techniques Biodiversity: loss, increasing, maintaining and monitoring Feeding the human race: food security, selective breeding, genetic engineering Health: communicable diseases, human infections

Nervous system (the eye, the brain, reflex arc) The endocrine system Plant hormones Homeostasis (controlling body temperature, blood sugar, water balance) The kidney **CHEMISTRY (C4, C5)** Predicting chemical reactions: the alkali metals, the halogens, the noble gases, reactivity of elements Detecting gases, cations and anions Monitoring chemical reactions: theoretical yield, percentage yield, titration and titration calculations, gas calculations Controlling reactions Equilibria	Electromagnetic spectrum Light: colour, lenses Radioactivity: isotopes, alpha, beta, gamma radiation, nuclear equation, half- life, fission, fusion	Plant diseases and defences Blood and body defences Monoclonal antibodies Vaccinations Aseptic technique New medicines Non- communicable diseases

Maths skills: standard form, ratios, percentages, fractions, estimating, significant figures, frequency tables and charts, mean, order of magnitude, mathematical symbols, changing the subject of an equation, SI units, using units, converting between units, graph calculations, graph plotting, line of best fit, graph analysis, area and volume

NB: maths skills for all sciences are addressed and revisited throughout KS4 studies frequently and time is allocated to assess and close the gap at the end of each term.

Working scientifically: applications of science, methods, models, communication, asking scientific questions, hypothesis, planning an investigation, obtaining, presenting and interpreting data, errors and uncertainties.

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https://www.bbc.com/bitesize/subjects/zrkw2hv
https://www.samlearning.com/
https://www.gcsepod.com/
https://www.youtube.com/ (free science lessons)
https://ocr.org.uk/qualifications/past-papers/

Other ways to support learning

Educational visits: Science Museum, Natural History Museum, Greenwich Observatory, Kew Gardens, Epping Forest, Imperial College, King's College, The Chase, Greenwich Maritime Museum

Year 11

Autumn term	Spring term	Summer term
Topics and themes	**Topics and themes**	**Topics and themes**

BIOLOGY (B4, B5, B6)

Ecosystems: abiotic and biotic factors, competition, interdependence, pyramids of biomass, efficiency
The carbon cycle
The nitrogen cycle
The water cycle
Inheritance: variation, sexual and asexual reproduction
Meiosis
Genetics: alleles, dominant and recessive, mutations, history of genetics
Evolution and natural selection
Sampling techniques
Biodiversity: loss, increasing, maintaining and monitoring
Feeding the human race: food security, selective breeding, genetic engineering
Health: communicable diseases, human infections
Plant diseases and defences
Blood and body defences
Monoclonal antibodies
Vaccinations
Aseptic technique
New medicines
Non- communicable diseases

December MOCK EXAMS

EXAM REVISION

C1-C3- 19.01.19
P1-P3- 01.02.19
B1-B3- 15.02.19
C4-C6- 08.03.19
P4-P6- 22.03.19

March MOCK EXAMS

EXAM REVISION AND EXAMS

B4-B6- 03.05.19
P7-P8- 05.05.19

EXAM DATES

BIOLOGY J247	B1-B3+B7	Tue	14 May	pm	1.45min
	B4-B6+B7	Fri	7 June	pm	1.45min
CHEMISTRY J248	C1-C3+C7	Thu	16 May	am	1.45min
	C4-C6+C7	Wed	12 June	am	1.45min
PHYSICS J249	P1-P4+P9	Wed	22 May	pm	1.45min
	P5-P8+P9	Fri	14-Jun	am	1.45min

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Other ways to support learning
Educational visits: Science Museum, Natural History Museum, Greenwich Observatory, Kew Gardens, Epping Forest, Imperial College, King's College, The Chase, Greenwich Maritime Museum Revision sessions, breakfast club, half- term sessions