Curriculum Knowledge Map - Science

Year 11 Separate Science BIOLOGY	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	The numbers below reference the AQA specification which can be accessed via this link (this is the programme of study followed in year 11) : https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF					
Declarative *What should they know*	**Bio 4.5 Homeostasis and response** 4.5.1. Homeostasis 4.5.2 The human nervous system 4.5.3 Hormonal coordination in humans 4.5.3.2 Control of blood glucose 4.5.3.3 Hormones in human reproduction 4.5.3.4 Contraception 4.5.3.5 Hormones and fertility 4.5.3.6 Feedback systems *Biology* *4.5.2.2 The brain* *4.5.2.3 The eye* *4.5.2.4 Control of body temperature* *4.5.3.3 Maintaining water and nitrogen balance in the body 4.5.4 Plant hormones*	**Bio 4.6 Inheritance, variation and evolution** 4.6.1.1 Sexual and asexual reproduction 4.6.1.2 Meiosis 4.6.1.3 DNA and the genome 4.6.1.4 Genetic inheritance 4.6.1.5 Inherited disorders 4.6.1.6 Sex determination 4.6.2.1 Variation *Biology* *4.6.1.3 Advantages and disadvantages of sexual and asexual reproduction* *4.6.1.5 DNA structure* *4.6.2.5 Cloning* *4.6.3.1 Theory of evolution* *4.6.3.2 Speciation* *4.6.3.3 The understanding of genetics*	**Bio 4.6 Inheritance, variation and evolution** 4.6.2.2 Evolution 4.6.2.3 Selective breeding 4.6.2.4 Genetic engineering 4.6.3.1 Evidence for evolution 4.6.3.2 Fossils 4.6.3.3 Extinction 4.6.3.4 Resistant bacteria 4.6.4 Classification of living organisms	Bio 4.7 Ecology 4.7.1.1 Communities 4.7.1.2 Abiotic factors 4.7.1.3 Biotic factors 4.7.1.4 Adaptations 4.7.2.1 Levels of organisation Required practical activity 7 - sampling	4.7.2.2 How materials are cycled 4.7.3.1 Biodiversity 4.7.3.2 Waste management 4.7.3.3 Land use 4.7.3.4 Deforestation 4.7.3.5 Global warming 4.7.3.6 Maintaining biodiversity *Biology* *4.7.2.3 Decomposition* *4.7.2.4 Impact of environmental change* *4.7.4 Trophic levels in an ecosystem* *4.7.5 Food production*	GCSE exams and revision

Curriculum Knowledge Map - Science

Year 11 Separate Science CHEMISTRY	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	The numbers below reference the AQA specification which can be accessed via this link (this is the programme of study followed in year 11) : https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF					
Declarative *What should they know*	**Chem 5.6 The rate and extent of chemical change** 5.6.1.1 Calculating rates of reactions 5.6.1.2 Factors which affect the rates of chemical reactions Required practical activity 11: rate of reaction 5.6.1.3 Collision theory and activation energy 5.6.1.4 Catalysts 5.6.2.1 Reversible reactions 5.6.2.2 Energy changes and reversible reactions 5.6.2.3 Equilibrium 5.6.2.4 The effect of changing conditions on equilibrium (HT only) 5.6.2.5 The effect of changing concentration (HT only) 5.6.2.6 The effect of temperature changes on equilibrium (HT only) 5.6.2.7 The effect of pressure changes on equilibrium (HT only)	**Chem 5.7 Organic chemistry** 5.7.1.1 Crude oil, hydrocarbons and alkanes 5.7.1.2 Fractional distillation and petrochemicals 5.7.1.3 Properties of hydrocarbons 5.7.1.4 Cracking and alkenes *chemistry* *4.7.2 Reactions of alkenes and alcohols* *4.7.3 Synthetic and naturally occurring polymers* **Chemistry 5.8 Chemical analysis** 5.8.1.1 Pure substances 5.8.1.2 Formulations 5.8.1.3 Chromatography Required practical activity 12: Chromatography. 5.8.2.1 Test for hydrogen 5.8.2.2 Test for oxygen 5.8.2.3 Test for CO2 5.8.2.4 Test for chlorine *Chemistry* *4.8.3 Identification of ions by chemical and spectroscopic means*	**5.9 Chemistry of the atmosphere** 5.9.1.1 The proportions of different gases in the atmosphere 5.9.1.2 The Earth's early atmosphere 5.9.1.3 How oxygen increased	5.9.1.4 How carbon dioxide decreased 5.9.2.1 Greenhouse gases 5.9.2.2 Human activities which contribute to an increase in greenhouse gases in the atmosphere 5.9.2.3 Global climate change 5.9.2.4 The carbon footprint and its reduction 5.9.3.1 Atmospheric pollutants from fuels 5.9.3.2 Properties and effects of atmospheric pollutants	**Chem 5.10 Using resources** 5.10.1.1 Using the Earth's resources and sustainable development 5.10.1.2 Potable water Required practical activity 13: water samples and analysis 5.10.1.3 Waste water treatment 5.10.1.4 Alternative methods of extracting metals (HT only) 5.10.2.1 Life cycle assessment 5.10.2.2 Ways of reducing the use of resources *Chemistry* *4.10.3 Using materials* *4.10.4 The Haber process and the use of NPK fertilisers*	GCSE exams and revision

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2

Curriculum Knowledge Map - Science

Year 11 **Separate Science** **PHYSICS**	**The numbers below reference the AQA specification which can be accessed via this link (this is the programme of study followed in year 11) :** **https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF**					
Declarative *What should they know*	**Phys 6.5 Forces** 6.5.1.1 Scalar and vector quantities 6.5.1.2 Contact and noncontact forces 6.5.1.3 Gravity 6.5.1.4 Resultant forces 6.5.2 Work done and energy transfer 6.5.3 Forces and elasticity Required practical activity 18: force and extension of a spring 6.5.4.1.1 Distance and displacement 6.5.4.1.2 Speed 6.5.4.1.3 Velocity 6.5.4.1.4 The distance–time relationship 6.5.4.1.5 Acceleration	6.5.4.2.1 Newton's First Law 6.5.4.2.2 Newton's Second Law Required practical activity 19: force and acceleration 6.5.4.2.3 Newton's Third Law 6.5.4.3.1 Stopping distance 6.5.4.3.2 Reaction time 6.5.4.3.3 Factors affecting braking distance 1 6.5.4.3.4 Factors affecting braking distance 2 6.5.5.1 Momentum is a property of moving objects (HT only) 6.5.5.2 Conservation of momentum (HT only) *Physics* *4.5.4 Moments, levers and gears* *4.5.5 Pressure and pressure differences in fluids*	**Phys 6.6 Waves** Waves 6.6.1.1 Transverse and longitudinal waves 6.6.1.2 Properties of waves Required practical activity 20: (observations of waves) 6.6.2.1 Types of electromagnetic waves 6.6.2.2 Properties of electromagnetic waves **Required practical activity 21 (absorption and emission of IR)** 6.6.2.3 Properties of electromagnetic waves 2 6.6.2.4 Uses and applications of electromagnetic waves *Physics* *4.6.1.3 Reflection of waves* *4.6.1.4 Sound waves* *4.6.1.5 Waves for detection and exploration* *4.6.2.5 Lenses* *4.6.2.6 Visible light* *4.6.3 Black body radiation*	**Phys 6.7 Magnetism and electromagnetism** **6.7.1.1** Poles of a magnet 6.7.1.2 Magnetic fields 6.7.2.1 Electromagnetism 6.7.2.2 Fleming's left-hand rule (HT only) 6.7.2.3 Electric motors (HT only) *Physics 4.7* 4.7.2.4 Loudspeakers Induced potential, transformers and the National Grid	**Space physics** **(Physics Only)** 4.8.1 Solar system; stability of orbital motions; satellites 4.8.2 Red-shift	GCSE exams and revision