

Curriculum intent statement for KS5 Science

**We aim to develop all students into scientists who:**

- are scientifically confident and highly skilled learners who are fully prepared for STEM-based careers
- have a broad and deep knowledge of the subject through immersion in our engaging Dare to Dream curriculum
- Take enjoyment from, and thrive in, the practical approaches to learning science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 12</b>						
<b>Biology</b> (Edexcel SNAB)	Topic 1 - Lifestyle, health and risk Topic 2 - Genes and Health	Topic 1 - Lifestyle, health and risk Topic 2 - Genes and Health	Topic 3 -Voice of the genome Topic 4 - Biodiversity and resources	Topic 3 -Voice of the genome Topic 4 - Biodiversity and resources	Topic 3 -Voice of the genome Topic 4 - Biodiversity and resources	PPEs  Global Warming Project
<b>Biology Skills</b>	Practical CPACs Practical 1, 3 Command words for examination questions A4 Maths skills (Geometry and trigonometry)	Practical CPACs Practical 4 A3 Maths skills (graphs and data interpretation)	Practical CPACs Practical 2	Practical CPACs Practical 5, 6, 7, 8, 9 Longer response questions A1 Maths skills (Handling data)	Practical CPACs Practical 10 A1, A3, A4 maths skills (Geometry and trigonometry, graphs, handling data)	Practical CPACs Practical 11, 12, 13, 14 A2 Maths skills (algebra) Synoptic links
<b>Biology Links</b> (Edexcel SNAB Bio A spec)	1.1 - 1.7 2.1 - 2.4  <b>Cross-curricular - P.E (year 12 HT1) Cardiovascular</b>	1.8 - 1.13 2.5 - 2.11  <b>Cross-curricular - Core Maths (correlation and causation) - Year 12 HT4</b>	1.14 - 1.18 2.12 - 2.16 3.1 - 3.5 4.1 - 4.6  <b>Cross-curricular: Psychology (year 12 term 1+2) Genotype, phenotype and the genetic basis of behaviour + evolution</b>	3.6 - 3.15 4.7 - 4.16	5.1 - 5.3 (Practical 10)  <b>Cross-curricular - Core Maths (stats) Year 12 HT1 A-Level Maths (statistics / working with data) Year 12 HT3</b>	5.1 - 5.11 6.1 - 6.5 / 6.15  <b>Cross-curricular: Geography (year 12 term 1) Plant succession, sand dunes and salt marshes</b>
<b>Chemistry</b>	3.1.1 Atomic Structure 3.1.2 Amount of Substance 3.1.3 Bonding	3.1.7 Redox 3.2.1 Periodicity 3.2.2 Group 2 3.2.3 Group 7 3.3.1 Intro to organic	3.1.4 Energetics 3.3.2 Alkanes	3.1.5 Kinetics 1 3.1.6 Chemical Equilibria 3.3.3 Haloalkanes 3.3.4 Alkenes	3.3.5 Alcohols 3.3.6 Organic Analysis	3.3.8 3.3.10 Lab books / Exam prep
<b>Chemistry Skills</b>	Practical Competencies Required practical 1 Required Practical 4 (part 1) Maths skills Units/ratios/standard	Practical Competencies Required Practical 4 (part 2)  Maths skills 2D and 3D geometry	Practical Competencies Required Practical 2  Maths skills	Practical Competencies Required Practical 3 Required Practical 5  Maths skills	Practical Competencies Required Practical 6  Maths skills	Exam technique.  Analysis and interpretation of Scientific data.

	form/equations/ uncertainty		Ratios/uncertainty	Equations	Translate data	Using ICT to analyse situations and process data.
<b>Chemistry Links</b>	Specification references 3.1.1 3.1.2 3.1.3 3.2.1. 3.2.3 Req pracs section 7.3 PS 1.1. 1.2 2.2. 3.3 MS 0.0 0.1 0.2 MS 1.1 1.2 1.3 MS 2.2 2.3 2.4 MS 4.1 4.2 4.3	Specification references 3.1.7 3.2.2 3.3.1  Req pracs section 7.3 PS 1.2 MS 0.2 MS 4.2 4.3	Specification references 3.1.4 3.3.2 3.3.3  Req pracs section 7.3 PS 2.1 2.2 3.1 3.2 3.3 MS 0.0 0.1 0.2 MS 1.1 1.2 1.3 MS 2.2 2.3 2.4	Specification references 3.1.5 3.1.6 3.3.4 3.3.5  Req pracs section 7.3 PS 1.2 2.1 3.2 MS 0.0 MS 2.1 2.2 2.3 2.4	Specification references 3.3.6  Req pracs section 7.3 PS 1.1 1.2 2.2 MS 3.1	Review of all topics so far.
<b>Physics</b> (Edexcel Concept Led)	Topic 2 Mechanics Topic 5 Waves and the Nature of Light	Topic 2 Mechanics Topic 5 Waves and the Nature of Light	Topic 3 DC Electricity Topic 4 Materials	Topic 3 Revision for PPEs and consolidation	Topic 6 Further Mechanics	Topic 8 Nuclear and Particle Physics
<b>Physics Skills</b>	Working in standard form.  Estimation.  Practical measurement methods.  Health and safety.  CPAC 1: Follows written procedures CPAC 2: Applies investigative approaches and methods when using instruments and equipment	Dimensional analysis.  Base and Derived unit.  Linkage to learning in Maths (cross-curricular)  Non-routine problem solving.  CPAC 1. CPAC 4: Makes and records observations	Multi-stage calculations.  Circuit building, troubleshooting and analysis.  Linear analysis.  CPAC2, CPAC 3: Safely uses a range of practical equipment and materials and CPAC 4	Longer response skills.  Complex algebraic derivations.  Communication and team- approach to success.  CPAC 1, 2, 3 and 4 and CPAC 5: Researches, references and reports	Limits to measurement.  Frontiers in physics.  Exam technique.  Analysis and interpretation of Scientific data.	Using ICT to analyse situations and process data.  CPAC 2, and 5
<b>Physics Links</b>	Topic 1 - Spec points 1 - 8. Topic 2 - Spec points 9 - 30 Topic 5 - Spec points 59 - 96.	Topic 1 - Spec points 1 - 8. Topic 2 - Spec points 9 - 30 Topic 5 - Spec points 59 - 96.	Topic 1 - Spec points 1 - 8. Topic 3 - Spec points 31 - 48. Topic 4 - Spec points 49 - 58.	Topic 1 - Spec points 1 - 8. Topic 3 - Spec points 31 - 48.	Topic 1 - Spec points 1 - 8 Topic 6 - Spec points 97 - 107	Topic 1 - Spec points 1 - 8 Topic 8 - Spec points - 130 - 138. Review of all topics so far.

Year 13						
<b>Biology</b> (Edexcel SNAB)	Topic 5 - On the Wild side Topic 6 - Immunity, Infection and Forensics	Topic 5 - On the Wild side Topic 6 - Immunity, Infection and Forensics	Topic 7 - Run for your Life Topic 8 - Grey Matter	Topic 7 - Run for your Life Topic 8 - Grey Matter	Topic 7 - Run for your Life Topic 8 - Grey Matter	REVISION / EXAMINATIONS
<b>Biology Skills</b>	Practical CPACs Practical 11, 12, 13, 14 A2 Maths skills (algebra) Synoptic links	Practical CPACs Practical 11, 12, 13, 14 A2 Maths skills (algebra) Synoptic links	Practical CPACs Practical 15 A1, A3, A4 maths skills (Geometry and trigonometry, graphs, handling data)	Practical CPACs Practical 16, 17, 18 A1, A2, A3, A4 maths skills (Geometry and trigonometry, graphs, handling data,	A1, A2, A3, A4 maths skills (Geometry and trigonometry, graphs, handling data, algebra) Synoptic links	Synoptic links Pre-release - reading for meaning

			Synoptic links	algebra) Synoptic links	Pre-release - reading for meaning	
<b>Biology Links</b> (Edexcel SNAB Bio A spec)	5.1 - 5.11 6.1 - 6.5 / 6.15  <b>Cross-curricular: Geography (Year 13 HT4) Global warming and the carbon cycle</b>	5.1 - 5.11 6.1 - 6.5 / 6.15  <b>Cross-curricular: Geography (Year 13 HT4) Global warming and the carbon cycle</b>	5.12 - 5.22 6.6 / 6.11 - 6.15  <b>Cross-curricular: Psychology (year 12 term 1) Nervous system, neurones and synapses, endocrine system, brain structure, brain scanning and injury</b>	7.1 - 7.10 8.1 - 8.7  <b>Cross-curricular - P.E (muscles and respiratory system and Energy systems) Year 12 HT 1</b>	7.1 - 7.10 8.1 - 8.7  <b>Cross-curricular - P.E (muscles and respiratory system and Energy systems) Year 12 HT 1</b>	
<b>Chemistry</b>	3.1.8 Thermodynamics 3.1.9 Rate Equations 3.1.12 Acids and Bases 3.3.7 Optical Isomerism	3.1.10 Equilibrium Constant 3.2.5 Transition Metals 3.3.9 Carboxylic acids 3.3.12 Polymers	3.2.4 Period 3 3.2.6 Aqueous Ions 3.1.11 Electrical Cells 3.3.11 Amines	3.3.13 Amino acids and DNA 3.3.16 Chromatography	3.3.14 Organic Synthesis 3.3.15 NMR Revision	
<b>Chemistry Skills</b>	Practical 7 Practical 9 Practical Skills - PS3.2,3.1,3.2,4.1,2.4 Maths Skills (Numerical computation)- 0.1, 0.0,0.3,0.4 Maths Skill (handling Data) - 1.1 Algebra -2.2,2.4,2.5 Graphs 3.1,3.2,3.3 Synoptic Links	Practical 11 Practical 10 Practical Skills - PS4.1,3.2,1.1  Maths Skills - Handling Data 1.1 Synoptic Links	Synoptic Skills Application and Evaluative skills	Practical 12  Practical Skills- 1.2,3.2,4.1 Maths Skills Ratio Rf calc in Chromatography) Synoptic Skills	Mathematical Skills focus on data handling and evaluative skills Practical skills and techniques linked to extended questions	Exam Technique. Analysis, application an evaluative skills
<b>Chemistry Links</b>	Spec points 3.1.9 3.3.8 3.3.7 3.1.10 3.1.8 3.1.12 3.2.5	Spec points 3.2.6 3.3.9 3.1.11	Spec points 3.3.11 3.2.4 3.3.12 3.3.10 3.3.13	Spec points 3.3.14 3.3.15 3.3.16		
<b>Physics</b>	Topic 7 Electric and Magnetic Fields Topic 9 Thermodynamics	Topic 7 Electric and Magnetic Fields Topic 10 Nuclear Radiation	Topic 11 + Gravitational Fields Topic 12 Space Topic 13 Oscillations	Topic 11 + Gravitational Fields Topic 12 Space Topic 13 Oscillations	Lab books and Revision for Public Examinations	Examinations
<b>Physics Skills</b>	Building capacitors using household items.  Inverse - Square relationships.  CPAC 2, 3, and 5	Non-linear relationships.  Indicative content extended writing practice.  CPAC 2, 3, 4 and 5	Scientific modelling of stochastic processes.  Linkage to previous learning.  Collaborative problem solving.  Health and safety.	Application of calculus to scientific analysis.  Synoptic view of the universe (linkage to previous learning).  CPAC 2, 4	Linkage and synopsis.  Adaptability and coping with pressure.	Examination technique.  Self-management and self-development.

			CPAC 2,3 and 5			
Physics Links	Topic 7- Spec points - 108 - 129. Topic 9 - Spec points 144 - 155.	Topic 7- Spec points - 108 - 129. Topic 10 - Spec points 156 - 163.	Topic 11 - Spec points 164 - 173. Topic 12 - Spec points 174 - 180. Topic 13 - Spec points 181 - 191.	All topics	All topics.	All topics.