



Astrea Science Subject Community

Curriculum Map

Updated 07/07/25

Enrichment Opportunities – Gatsby Benchmark 5 & 6

Note: Gatsby Benchmark 4 is comprehensively met

DT / Science Project
(2 weeks)
Balloon Car Challenge
Bosch Rexroth in Cambridgeshire
??? in South Yorkshire

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
7	The Scientific Method	Movement & Organisation	Matter & Mixtures	Forces & Motion	Genes & Reproduction	Elements & Periodic Table
8	Respiration & Photosynthesis	Energy	Reactions	Electricity	Waves	Earth & The Universe

Science Fair Project
(2 weeks)
Completed at any time in term 2 to suit your setting

Interaction with PD

Healthy lifestyle / drugs /
alcohol and smoking in PD

Essential to teach
Forces & Motion
before DT project

DT / Science Project
(2 weeks)
Balloon Car Challenge
Bosch Rexroth in Cambridgeshire
??? in South Yorkshire

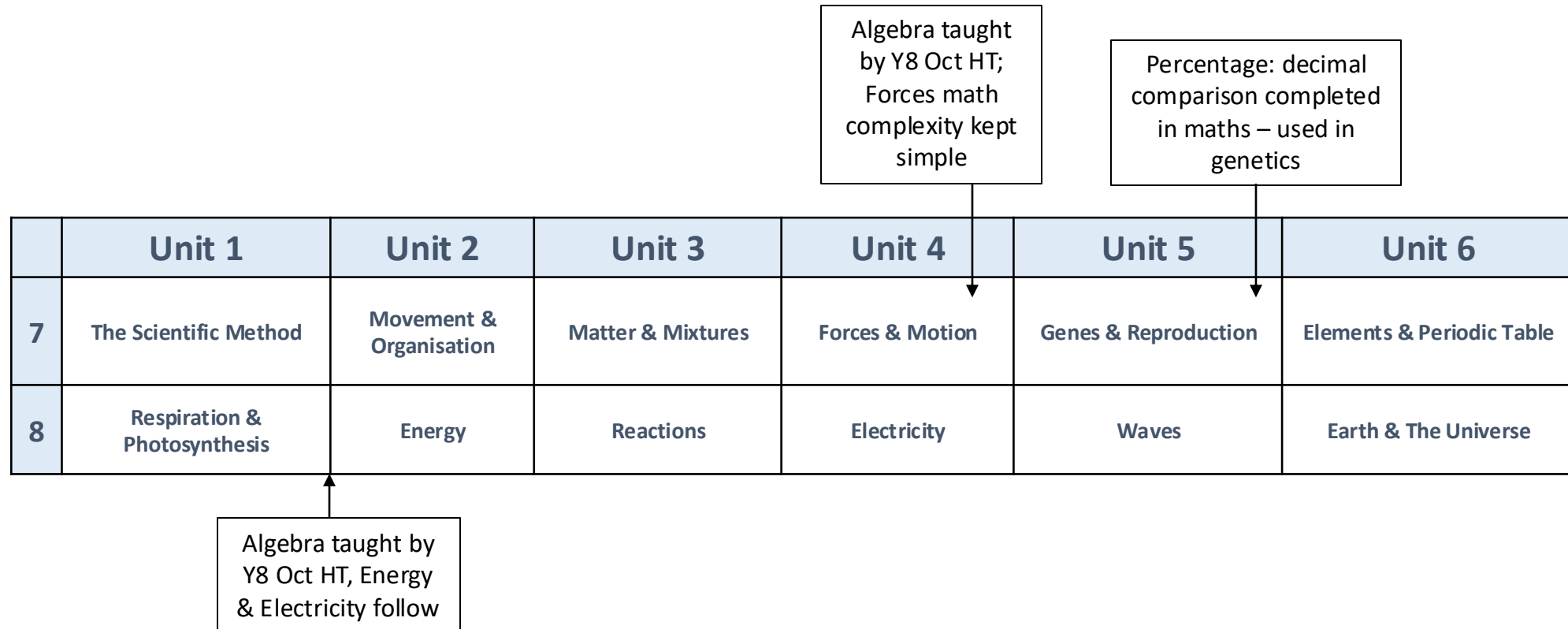
	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
7	The Scientific Method	Movement & Organisation	Matter & Mixtures	Forces & Motion	Genes & Reproduction	Elements & Periodic Table
8	Respiration & Photosynthesis	Energy	Reactions	Electricity	Waves	Earth & The Universe

Food tests in
GCSE (done well)

Science Fair Project
(2 weeks)
*Completed at any time in term 2 to suit
your setting*

Endometriosis from PD

Interaction with Maths



Year 7

Unit 1 The Scientific Method	Unit 2 Movement & Organisation	Unit 3 Matter & Mixtures	Unit 4 Forces & Motion	Unit 5 Genes & Reproduction	Unit 6 Elements & Periodic Table
18 lessons	17 lessons	21 lessons	19 lessons	21 lessons	20 lessons
1. What is science? 2. Observation, Hypothesis & Theory. 3. Variables 4. Methods 5. Scientific Drawing 6. Hazards & Risk 7. Practical work – Like a scientist 8. Tables 9. The Bunsen burner 10. Testing a hypothesis 11. Quality of data 12. Errors 13. Communicating Results 14. Bar charts 15. Line graphs 16. Conclusions	1. Animal & plant cells 2. Specialised cells 3. Development of the microscope 4. Biological drawing 5. Microscopy 6. Microscopy 7. Unicellular organisms 8. Biological organisation 9. DP lesson (organisation) 10. Skeletal system 11. Muscles & joints 12. Antagonistic pairs dissection 13. Orthopaedics 14. DP lesson (movement) 15. Cheek cell microscopy	1. States of matter 2. Interparticle forces 3. Solids 4. Fluids 5. Viscosity 6. Diffusion 7. Rate of diffusion 8. Rate of diffusion – conclusions 9. Changes of state 10. Particle model DP 11. Solutions 12. Separating mixtures 13. Filtration 14. Evaporation 15. Distillation 16. Chromatography 17. Chromatography 18. Separating mixtures challenge 19. Chromatography crime scene	1. Speed 2. Motion 3. Distance-time 4. Acceleration & relative speed 5. Forces 6. Free body diagrams 7. Friction 8. Forces & Motion DP 9. Gravity 10. Mass & Weight 11. Gravity & Drag 12. Hooke's Law 13. Pressure in solids 14. Pressure in fluids 15. Buoyancy 16. Forces & motion DP 17. Hooke's Law challenge	1. Reproduction 2. Puberty 3. Menstrual cycle 4. Embryo development 5. Early life development 6. Factors affecting development 7. Fertility 8. Plant reproduction 9. Seed dispersal 10. Reproduction DP 11. Variation 12. Causes of Variation 13. Genetic Material 14. Modelling inheritance 15. Natural selection 16. Evolution by Natural Selection 17. Biodiversity 18. Extinction 19. Genetics DP	1. Elements 2. Simple atomic structure 3. The periodic table & its Development 4. Metals and non-metals 5. Group 1 6. Group 7 7. Group 0 8. Ceramics, composites and polymers 9. Deliberate Practice 10. Compounds 11. Formulae & Naming Compounds 12. Chemical vs physical changes 13. Representing reactions 14. Conservation of mass 15. Symbol equations 16. Elements + Oxygen 17. Deliberate Practice 18. Polymer challenge
Assess 17. Assessment 18. Feedback / close gaps	Assess 16. Assessment 17. Feedback / close gaps	Assess 20. Assessment 21. Feedback / close gaps	Assess 18. Assessment 19. Feedback / close gaps	Assess 20. Assessment 21. Feedback / close gaps	Assess 19. Assessment 20. Feedback / close gaps

Unit 1 Respiration & Photosynthesis	Unit 2 Energy	Unit 3 Reaction	Unit 4 Electricity	Unit 5 Waves	Unit 6 Earth & The Universe
17 lessons	17 lessons	21 lessons	18 lessons	20 lessons	19 lessons
1. Aerobic respiration 2. Gas Exchange 3. Gas exchange: DP 4. Digestion 5. Enzymes 6. Enzymes and absorption 7. Enzyme optima 8. Enzyme optima: Write-up 9. Delivery of glucose DP 10. Photosynthesis 11. Glucose 12. Limiting Factors of photosynthesis 13. Limiting factors of photosynthesis 14. Limiting factors of photosynthesis 15. Leaf microscopy	1. What is Energy? 2. Energy Stores 3. Energy Transfers 4. Gravitational Potential & Kinetic Stores 5. Elastic Potential Stores 6. Power 7. Energy in the Home 8. Energy Efficiency 9. Conduction 10. Convection 11. Radiation and Evaporation 12. Heating and Cooling 13. Change in State 14. DP: Energy 15. DP: Conduction, Convection & Radiation	1. Acids 2. Alkalis 3. Indicators and pH scale 4. Neutralisation 5. Neutralisation - planning 6. Neutralisation – investigation 7. Metals with acids 8. Metals with carbonates 9. Deliberate Practice 10. Displacement 11. Displacement investigation 12. Metals + Metal Oxides 13. Heating Carbonates 14. Precipitation 15. Energy changes in reactions 16. Combustion in fuels 17. Catalyst 18. Deliberate practice 19. Displacement challenge	1. Charge 2. Current & Voltage 3. Drawing Circuits 4. Making circuits 5. Measuring Current & Voltage 6. Measuring current 7. Measuring voltage 8. Ohm's Law & Resistance 9. Resistance investigation 10. Resistance investigation cont. 11. Resistance in Circuits 12. Electricity DP 13. Magnetism 14. Electromagnets 15. Electromagnet investigation 16. Electromagnet investigation	1. What are Waves? 2. Longitudinal & Transverse Waves 3. Properties of Waves (Across Distance) 4. Properties of Waves (Across Time) 5. What is Sound? 6. Describing Sounds 7. Hearing Sounds 8. Reflection & Absorption of Sound 9. DP – Waves & Sound 10. What is Light? 11. Colour and the Electromagnetic Spectrum 12. Reflection 13. Reflection 14. Refraction 15. Refraction 16. Lenses 17. Vision 18. DP – Light	1. Earth's Structure 2. Igneous Rocks 3. Weathering, Erosion, Transportation & Deposition 4. The Rock Cycle 5. Extraction of Metal 6. Atmosphere & Greenhouse Effect 7. Carbon Cycle 8. Climate Change 9. History of Understanding of the Solar System 10. Our Solar System 11. Days, Seasons & Years 12. The Moon 13. Our Place in the Universe 14. The Space Race 15. Modern Space Exploration 16. DP - Space 17. DP - Earth Science
16. Assessment 17. Feedback / close gaps	16. Assessment 17. Feedback / close gaps	Science Fair Project (6 lessons)		19. Assessment 20. Feedback / close gaps	18. Assessment 19. Feedback / close gaps
		20. Assessment 21. Feedback / close gaps	17. Assessment 18. Feedback / close gaps		

Year 9

Unit 1 Cell Biology	Unit 2 Atomic Structure	Unit 3 Energy	Unit 4 Organisation	Unit 5 Structure & Bonding	Unit 6 Particle Model & Atomic Structure
18 lessons	15 lessons	21 lessons	16 lessons	13 lessons	16 lessons
1. Cells 2. Cell specialisation 3. Magnification 4. <i>Microscopy</i> 5. DNA & Chromosomes 6. Bacterial division 7. Microbe 8. <i>Growing Microbes & Aseptic technique</i> 9. Analysis of plates 10. Mitosis 11. Stem cells 12. Diffusion 13. Osmosis 14. <i>Osmosis Practical</i> 15. Osmosis – Data analysis 16. Active transport	1. Atoms, elements & compounds 2. Mixtures & Separation 3. <i>Filtration & crystallisation</i> 4. <i>Distillation</i> 5. Word & Symbol equations 6. History of the atom 7. Atomic structure 8. Isotopes 9. The History of the Periodic Table 10. Metals & Non-metals 11. <i>Group 1 metals</i> 12. Transition metals 13. Halogens	1. Energy stores 2. Energy transfers 3. Thermal transfers 4. Unwanted energy transfers 5. <i>Investigating unwanted energy transfers</i> 6. Wind & solar energy 7. Biofuel & Geothermal 8. Non renewables 9. Consolidation of learning through data task. 10. Work done and Power 11. Gravitational Potential Energy 12. Elastic Potential Energy 13. Kinetic Energy 14. Conservation of Energy calculations	1. Principles of organisation 2. <i>Food Tests Practical</i> 3. Enzymes 4. <i>Investigating Enzymes</i> 5. Processing data 6. Digestive Enzymes 7. Digestion and absorption 8. The Lungs (exchange surfaces) 9. Circulation – The blood vessels and blood 10. Circulation – The heart 11. <i>Heart Dissection</i> 12. Coronary Heart Disease 13. Risk Factors – Non-Communicable Diseases 14. Cancer	1. States of Matter 2. Atoms into Ions 3. Ionic Bonding 4. Properties of Ionic Compounds 5. Covalent Bonding 6. Properties of Simple Covalent Molecules 7. Giant Covalent Substances 8. Metallic Bonding 9. Alloys and Properties 10. <i>Classifying Bonding Practical</i> 11. Nanoparticles	1. Density and the States of Matter 2. <i>Density investigation</i> 3. <i>Density investigation</i> 4. Changes of State 5. Internal Energy 6. <i>Specific Heat Capacity Practical</i> 7. <i>Specific Heat Capacity Practical</i> 8. Specific Latent Heat 9. Pressure and Temperature in Gases 10. Pressure and Volume in Gases 11. The Development of the Atomic Model 12. Radioactive Decay and Nuclear Equations 13. Nuclear Radiation 14. Half-Lives 15. Radiation Risks 16. Uses of Nuclear Radiation 17. Nuclear Fission and Fusion
17. Assessment 18. Feedback / close gaps	14. Assessment 15. Feedback / close gaps	15. Assessment 16. Feedback / close gaps	15. Assessment 16. Feedback / close gaps	12. Assessment 13. Feedback / close gaps	18. Assessment 19. Feedback / close gaps

Y9–Y11: Agreed Common Curriculum Sequence

Biology	Chemistry	Physics
7 Units	10 Units	8 Units
1. B1 Cell Biology 2. B2 Organisation 3. B3 Infection & Response 4. B4 Bioenergetics 5. B5 Homeostasis & Response 6. B6 Inheritance, Variation and Evolution 7. B7 Ecology	1. C1 Atomic Structure & the Periodic Table 2. C2 Bonding, Structure & Properties 3. C3 Quantitative Chemistry 4. C4 Chemical Changes 5. C5 Energy Changes 6. C6 The Rate & Extent of Chemical Change 7. C7 Organic Chemistry 8. C8 Chemical Analysis 9. C9 Chemistry of the Atmosphere 10. C10 Using Resources	1. P1 Energy 2. P3 Particle Model of Matter 3. P4 Atomic Structure 4. P2 Electricity 5. P5 Forces 6. P6 Waves 7. P7 Magnetism & Electromagnetism 8. P8 Space (Triple only)
B1 and B2 are taught first as we want scholars to have a solid understanding of the fundamentals of Biology which are woven into every subsequent unit. Some concepts from B4 are required for deep learning of B2, for example respiration when studying coronary heart disease- the foundations of this topic are covered in 8.1 and will be retrieved here.	C1 and C2 are taught first as we want scholars to have a solid understanding of the fundamentals of Chemistry which are woven into every subsequent unit. Whilst we acknowledge the challenging mathematical content covered in C3 (such as moles equations), we have chosen to teach this early on to provide opportunities for scholars to practice the calculations within the context of future units. It is also important to cover conservation of mass, word and symbol equations in C3 before moving onto C4 where these are essential for understanding acids and alkalis. Through the rest of the sequence, essential prerequisite knowledge builds from unit to unit, for example, when studying the Atmosphere in C9, scholars will need to apply knowledge of writing equations and gas tests as well as cross discipline knowledge using understanding from P6 waves to explain the interaction of long-wave and short-wave radiation in the greenhouse effect.	P1 is taught first as we want scholars to have a solid understanding of the fundamentals of Physics which are woven into every subsequent unit. Whilst we acknowledge the challenging mathematical content covered in P1 (such as kinetic energy calculations), we have chosen to teach this early on to provide opportunities for scholars to practice the calculations within the context of future units. P3 and P4 are taught next to support scholars building schema- these topics share content with C1 which will have just been taught. P2 has conceptually the most difficult content and so is moved later into the physics sequence. In P7 scholars will draw on knowledge from P2 when studying electromagnets as well as C2 when considering the properties of metals.
To support retrieval of pre-requisite knowledge throughout our curriculum sequence, our booklets will be designed to provide regular opportunities to revisit core content from previous units. This will be woven into Do Now tasks and scholars will have detailed knowledge organisers to support development of fluency and to provide opportunity for self-testing. As well as recall, scholars will be given frequent opportunity to apply both substantive and disciplinary knowledge to exam style questions.		