CITY ACADEMY NORWICH

Science 2024-2025

Sapientia EDUCATION TRUST

Year	Focus	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
7	Develop knowledge in disciplines of Chemistry, Biology and Physics by exploring 11 big ideas. Develop understanding of the importance of safety in a laboratory for conducting experiments. Demonstrate knowledge in a range of forms such as models, tables, and graphs.	**Earth & Ecosystems** Expand on knowledge of Earth and Space from KS2. Understand the Earth's structure, Rock cycle & structure of the Universe. Link the structure of our planet to the life that lives on it & variations in habitats.	**Ecosystems & Waves** Continue expanding knowledge about structure of our planet to the life that lives on it & variations in habitats moving from concrete to abstract concepts. Expand on knowledge of light and sound waves from KS2, linking light to Earth and plants from Autumn 1.	**Waves & Reactions** Continue learning about light and sound waves, before developing knowledge of metals, non-metals, acids, and alkalis.	**Reactions & Energy** Continue expanding knowledge of metals, non-metals, acids, and alkalis, moving from concrete to abstract concepts. Use knowledge of reactions to explore where we get energy from and how it is transferred.	**Organisms** Apply knowledge of reactions & energy to organisms by exploring how energy is generated through respiration & food to generate movement. Extend understanding into microscopic level of cells & organelles. Apply knowledge of cells to explore how variation in individuals is a result of different structures within DNA	**Forces & Genes** Expand on knowledge of speed, distance graphs from KS2 by moving from concrete concepts of speed & gravity to abstract concepts around genes & matter. Practice using & understanding graphs.
	Assessments:	1. GL Progress Test – KS3 Science 2. Earth 1 Learning Check	3. Ecosystems 1 Learning Check 4. End of Term Test	5. Waves 1 Learning Check	6. Reactions 1 Learning Check 7. Energy 1 Learning Check	8. Organisms 1 Learning Check	9. Forces 1 Learning Check 10. Genes 1 Learning Check 11. End of Year Test
	Extra-Curricular:				British Science Week		Rewards Trips
	Home Resources: Homework is set online through the websites Seneca and Tassomai to support students' retrieval of key knowledge and encourage long term memory. Alternative resources for each topic can be found in the attached links.	**Earth**: 1. Earth Structure 2. Universe **Ecosystems:** 1. Interdependence 2. Plant Reproduction	**Ecosystems:** 1. Interdependence 2. Plant Reproduction **Waves**: 1. Sound 2. Light	**Waves**: 1. Sound 2. Light **Reactions:** 1. Acids and Alkalis 2. Metals and Non-metals – Coming Soon!	**Reactions:** 1. Acids and Alkalis 2. Metals and Non-metals – Coming Soon! **Energy**: 1. Energy Costs – Coming Soon! 2. Energy Transfer – Coming Soon!	**Organisms:** 1. Movement 2. Cells	**Forces:** 1. Speed 2. Gravity **Genes**: 1. Variation 2. Human Reproduction

Year	Focus	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
8	Enhance knowledge in disciplines of Chemistry, Biology and Physics by exploring 11 big ideas. Develop disciplinary knowledge by planning, completing, and analysing results from experiments. Know about hypotheses, variables, and reliability.	**Electromagnets** Introduce creating a hypothesis and consider variables. Begin to explore how current flows around a circuit. Understand principles of current and voltage.	**Earth & Waves** Use knowledge of electromagnetics to explore how electricity is impacting Earth's resources and climate. Revisit sound & light waves and link this to global warming and The Greenhouse effect.	**Ecosystems** Explore the role of light in photosynthesis and link to climate. Introduce the concept of respiration	**Reactions & Energy** Consider photosynthesis and respiration as exothermic and endothermic reactions and how this leads to heating and cooling. Use and evaluate data from experiments.	**Energy & Forces** Understand equation (w=fxd) and link to forces and pressure. Evaluate scientific methods.	**Organisms** Investigate the effect of lifestyle on health. Introduce how to write Scientific conclusions. Use knowledge of forces to explore changes in lung capacity and rate of breathing.
	Assessments:	1. Electromagnets 1 Learning Check	2. Summative Assessment 3. Earth 2 Learning Check 4. Waves 2 Learning Check	5. Ecosystems 2 Learning Check	6. Reactions 2 Learning Check	7. Energy 2 Learning Check 8. Forces 2 Learning Check	9. Organisms 2 Learning Check 10. End of Year Test
	Extra-Curricular:				British Science Week		Rewards Trips
	Home Resources: Homework is set online through the websites Seneca and Tassomai to support students' retrieval of key knowledge and encourage long term memory. Alternative resources for each topic can be found in the attached links.	**Electromagnets:** 1. Voltage and Resistance 2. Current	**Earth:** 1. Climate 2. Earth Resources – Coming Soon! **Waves:** 1. Wave properties – Coming Soon! 2. Wave effects – Coming Soon!	**Ecosystems:** 1. Respiration 2. Photosynthesis	**Reactions:** 1. Types of Reaction 2. Chemical Energy **Energy:** 1. Work 2. Heating and Cooling – Coming Soon!	**Energy:** 1. Work 2. Heating and Cooling – Coming Soon! **Forces:** 1. Contact Forces 2. Pressure	**Organisms:** 1. Breathing 2. Digestion

Year	Focus	Autumn 1	Autumn 2	Spring	Summer
9	Strengthen & expand knowledge in disciplines of Chemistry, Biology	**Forces, Organisms & Matter**	**Matter, Genes & Electromagnetics**	**Biology** Begin foundational knowledge for GCSE by focusing on the discipline of Biology.	**Biology**

	and Physics by exploring 11 big ideas. Develop application of disciplinary knowledge by considering the scientific method in its entirety.	Understand difference between hypothesis & theory. Understand equation (w=fxd) and link to forces and pressure. Investigate the effect of lifestyle on health. Explore how the Periodic Table was developed. Explore how the theory of evolution has developed over time.	Apply prior knowledge to investigate magnetic fields and their uses, and how they can be created & improved. Revise for End of KS3 Test and then complete 3 experiments in their entirety.	Explore in greater depth cell biology, and particle transport. **Chemistry** Begin foundational knowledge for GCSE by focusing on the discipline of Chemistry. Explore in greater depth The Periodic Table and develop understanding of the atomic structure. **Physics** Begin foundational knowledge for GCSE by focusing on the discipline of Physics. Explore in greater depth the concept of and principles of energy.	Develop knowledge of cell division and introduce bioenergetics (photosynthesis and respiration) **Chemistry** Introduce quantitative chemistry. **Physics** Introduce particle model of matter.
	Assessments:	1. Matter 2 Learning Check 2. Genes 2 Learning Check	3. Electromagnets 2 Learning Check 4. End of Term Test	5. C1 Learning Check 6. P1 Learning Check	7. B1 Learning Check 8. C3 Learning Check 9. P3 Learning Check 10. B4 Learning Check 11. End of Year Test
	Extra-Curricular:			Science Fair	Rewards Trips
	Home Resources: Homework is set online through the websites Seneca and Tassomai to support students' retrieval of key knowledge and encourage long term memory. Alternative resources for each topic can be found in the attached links.	**Forces:** 1. Contact Forces 2. Pressure **Organisms:** 1. Breathing 2. Digestion **Matter:** 1. Elements 2. Periodic Table	**Genes:** 1. Evolution 2. Inheritance **Electromagnets:** 1. Magnetism – Coming Soon! 2. Electromagnetism – Coming Soon!	**Biology** 1. Cell Structure and Transport 2. Cell Division (Part 1) (Part 2) **Chemistry** 1. Atomic Structure (Part 1) (Part 2) 2. Periodic Table (Part 1) (Part 2) **Physics** 1. Conservation and dissipation of energy 2. Energy transfer by heating – Coming Soon! 3. Energy resources – Coming Soon!	**Biology** 1. Cell Division (Part 1) (Part 2) 2. Photosynthesis – Coming Soon! (Part 1 & Part 2) 3. Respiration – Coming Soon! **Chemistry** 1. Quantitative Chemistry **Physics** 1. Particle Model of Matter – Coming Soon!

Year	Focus	Autumn	Spring	Summer
10	Become competent in Scientific study of the three disciplines – Biology Chemistry, Physics - necessary for understanding ourselves, our lifestyles and the world around us, as well as preparing for the world of work / various careers.	**Biology –** Bioenergetics: photosynthesis and respiration, Organisation: cells, tissues, organs, systems. **Chemistry –** Quantitative Chemistry, Energy Changes: exothermic and endothermic reactions. Bonding: ionic, covalent and metallic bonding **Physics –** Atomic structure: protons, electrons, neutrons, and nucleus. Electricity: calculating power, energy, resistance;	**Biology –** Organisation: cells, tissues, organs, systems. Infection & Response: communicable diseases; cures & prevention. **Chemistry –** Bonding: ionic, covalent and metallic bonding. Chemical Changes: irreversible & reversible changes, electrolysis **Physics –** Electricity: circuits & fuses. Waves: light, sound,	**Biology –** Infection & Response: communicable diseases; cures & prevention. Ecology: biotic & abiotic factors; biodiversity. **Chemistry –** Chemical Changes: irreversible & reversible changes, electrolysis. Chemistry of the atmosphere: composition of Earth's atmosphere; greenhouse gases, climate change **Physics –** Waves: reflection, and refraction. Magnetism & Electromagnetism: north & south poles; Earth's magnetism.
	Assessments:	1. C3 Learning Check 2. B4 Learning Check 3. P4 Learning Check 4. C5 Learning Check	5. P2 Learning Check 6. B2 Learning Check 7. C2 Learning Check 8. End of Term Assessment – Physics Paper 1	9. P6 Learning Check 10. B3 Learning Check 11. C4 Learning Check 12. P7 Learning Check 13. MOCK EXAMS: Paper 1s 14. B7 Learning Check 15. C9 Learning Check
	Extra-Curricular:		Science Fair	Rewards Trips
	Home Resources: Homework is set online through the websites Seneca and Tassomai to support students' retrieval of key knowledge and encourage long term memory. Alternative resources for each topic can be found in the attached links. Past papers and exam questions are also available to support students.	**Biology** 1. Photosynthesis – Coming Soon! (Part 1 & Part 2) 2. Respiration – Coming Soon! 3. Organisation of Animals and Plants 4. Organising animals and plants (Part 1) (Part 2) 5. Non-Communicable Disease **Chemistry** 1. Quantitative Chemistry 2. Energy Changes – Coming Soon! 3. Bonding (Part 1) (Part 2) **Physics** 1. Atomic Structure – Coming Soon! 2. Electric Circuits – Coming Soon! 3. Electricity in the Home – Coming Soon!	**Biology** 1. Organisation of Animals and Plants 2. Organising animals and plants (Part 1) (Part 2) 3. Non-Communicable Disease 4. Communicable Disease 5. Preventing and Treating Disease – Coming Soon! **Chemistry** 1. Bonding (Part 1) (Part 2) 2. Chemical Changes – (Part 1) (Part 2) Coming Soon! 3. Electrolysis – Coming Soon! **Physics** 1. Electric Circuits – Coming Soon! 2. Electricity in the Home – Coming Soon! 3. Wave properties 4. Electromagnetic Waves	**Biology** 1. Communicable Disease 2. Preventing and Treating Disease – Coming Soon! 3. Adaptations, Inheritance and competition – Coming Soon! 4. Organisation of an ecosystem – Coming Soon! 5. Biodiversity and the effect of human interaction on ecosystems – Coming Soon! **Chemistry** 1. Chemical Changes – (Part 1) (Part 2) Coming Soon! 2. Electrolysis – Coming Soon! 3. Chemistry of the atmosphere **Physics** 1. Wave properties 2. Electromagnetic Waves 3. Magnetism

Year	Focus	Autumn	Spring	Summer
11	Confidently know and independently apply knowledge of Scientific study in all three disciplines to our lives and the world around us. Be scientifically ready for GCSE exams and achieve success to enter college / Sixth Form / careers.	**Biology –** Inheritance, Variation & Evolution: genetics, DNA, Darwin's theory. **Chemistry –** Resources: finite and renewable resources, clean water, preserving resources. The Rate and extent of Chemical Change: know four factors that affect change. **Physics –** Magnetism & Electromagnetism: north & south poles; Earth's magnetism. Forces: Scalar, Vector, and Newton's Law.	**Biology –** Homeostasis & Response: nervous system, body temperature, blood pH, and glucose levels. **Chemistry –** Organic Chemistry: crude oil, hydrocarbons, and alkanes. Chemical analysis: pure substances and mixtures, chromatography, testing for gases. **Physics –** Forces: Scalar, Vector, and Newton's Law.	**Revision** in all three disciplines, focusing on areas of weakness or gaps in knowledge from mock exams and in-class assessments. Practice understanding and responding to exam paper questions.
	Assessments:	1. P7 Learning Check 2. C10 Learning Check 3. MOCK EXAMS: Paper 1s 4. C6 Learning Check 5. B6 Learning Check	6. C7 Learning Check 7. P5 Learning Check 8. B5 Learning Check 9. C8 Learning Check 10. MOCK EXAMS: Paper 2s	GCSE exams begin
	Extra-Curricular:	After School Intervention After School Intervention	After School Intervention Science Fair & After School Intervention	After School Intervention
	Home Resources: Homework is set online through the websites Seneca and Tassomai to support students' retrieval of key knowledge and encourage long term memory. Alternative resources for each topic can be found in the attached links. Past papers and exam questions are also available to support students.	**Biology** 1. Reproduction (Part 1) (Part 2) 2. Variation and Evolution (Part 1) (Part 2) (Part 3) 3. Genetics and Evolution (Part 1) (Part 2) **Chemistry** 1. Using Resources – (Part 1) (Part 2) Coming Soon! 2. Rates of Reaction – Coming Soon! **Physics** 1. Magnetism 2. Forces in balance 3. Motion 4. Force and motion (Part 1) (Part 2)	**Biology** 1. The Human Nervous System – Coming Soon! 2. Hormonal Coordination (Part 1 – Coming Soon!) (Part 2) **Chemistry** 1. Organic Chemistry 2. Chemical Analysis **Physics** 1. Forces in balance 2. Motion 3. Force and motion (Part 1) (Part 2)	