Sexey's School Science Curriculum Map

Year 7

Topics and links	Autumn Term		Spring Term		Summer Term	
	Introduction	**Cycle A**	**Cycle B**	**Cycle C**	**Cycle D**	**Cycle E**
	• Safety in a science laboratory • Using laboratory equipment • Conducting investigations	• 5.1 – Particle model • 8.2 – Cells	• 1.1 – Speed • 6.2 – Acids and Alkalis • 8.1 – Movement • 1.2 – Gravity	• 2.1 - Potential Difference • 2.2 – Current • 10.1 – Variation • 10.2–Human reproduction	• 9.1 – Interdependence • 5.2 – Separating mixtures • 6.1 – Metals • 7.2 – Universe	• 7.1 – Earth structure • 10.3 – Evolution
Co-curricular opportunities and Gatsby (careers) links	Practical science and measurement careers linked to laboratory skills. GB4 (Linking curriculum learning to careers).	Materials science careers linked to the particle model. GB4 (Linking curriculum learning to careers).	Training, fitness and motorsport careers linked to speed and movement. GB4 (Linking curriculum learning to careers).	Electrician careers linked to electricity. GB4 (Linking curriculum learning to careers).	Distillation and forensic-science careers linked to separating mixtures. GB4 (Linking curriculum learning to careers).	Materials science, mining and recycling careers, including the future of mining. GB2 (Learning from careers and labour market information); GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Courage, Honesty and Respect:** Safe routines, asking for help and reporting accidents express Christian care for others.	**Kindness, Respect and Honesty:** Cells and particles inspire wonder at creation, truthful evidence and care for living things.	**Resilience and Forgiveness:** Repeated measurement and mistakes build perseverance; body systems model community and shared purpose.	**Empathy, Courage and Respect:** Variation and reproduction affirm dignity, difference and varied family circumstances.	**Honesty, Kindness and Respect:** Interdependence and materials promote stewardship; the Universe inspires wonder and respectful science-faith dialogue.	**Courage, Resilience and Forgiveness:** Evolution and Earth history show ideas refined by evidence, encouraging humility and respect.

*Cycles don't fit exactly into half term blocks therefore timings are approximate.

Sexey's School Science Curriculum Map

Year 8

Topics and links	Autumn Term		Spring Term		Summer Term
	Cycle A	**Cycle B**	**Cycle C**	**Cycle D**	**Cycle E**
	• 1.3 – Contact forces • 8.3 – Breathing • 10.4 – Inheritance	• 2.3 – Electromagnets • 2.4 – Magnetism • 4.1 – Sound • 9.3 – Respiration	• 3.4 – Heating and Cooling • 5.4 – Elements • 8.4 – Digestion	• 4.2 – Light • 6.3 – Chemical Energy • 6.4 – Types of reaction • 9.4 – Photosynthesis	• 7.4 – Earth resources • Investigative Skills
Co-curricular opportunities and Gatsby (careers) links	Fitness and healthcare careers linked to breathing. GB4 (Linking curriculum learning to careers).	Transportation careers linked to uses of magnets. GB4 (Linking curriculum learning to careers).	Materials science careers. GB4 (Linking curriculum learning to careers).	Agriculture careers linked to photosynthesis. GB4 (Linking curriculum learning to careers).	Practical-science and measurement careers; materials science, mining and recycling careers. GB2 (Learning from careers and labour market information); GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Empathy, Kindness and Respect:** Breathing and inheritance encourage dignity, compassion and support for different needs.	**Courage, Honesty and Kindness:** Magnetism and sound require careful observation; teamwork helps every contribution to be valued.	**Honesty, Resilience and Forgiveness:** Accurate evidence and repeated attempts develop gratitude for conditions that help life flourish.	**Respect, Courage and Empathy:** Light links science with Christian symbolism; photosynthesis prompts wonder and stewardship of creation.	**Respect, Honesty and Resilience:** Finite resources require fairness; investigations develop truthful data, improvement and responsibility to future generations.

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Sexey's School Science Curriculum Map

Year 9

Topics and links	Autumn Term		Spring Term		Summer Term
	Cycle A	**Cycle B**	**Cycle C**	**Cycle D**	**Unit 6**
	• 1.4 – Pressure • 7.3 – Climate • GCSE Physics Intro Unit Pt 1 inc. 3.1 Energy Transfers	• 3.3 – Work Done • 4.3 – Wave Effects • 4.4 – Wave Properties • 9.2 – Plant Reproduction • GCSE Biology Intro Unit Part 1	• GCSE Chemistry Intro Unit Pt 1 • GCSE Physics Intro Unit Pt 2 inc. 3.1 Energy Transfers	• GCSE Biology Intro Unit Pt 2 • GCSE Physics Intro Unit Pt 3 inc. 3.2 Energy Costs	• GCSE Chemistry Intro Unit Pt 2 inc. 5.3 Periodic Table • GCSE Biology Intro Unit Pt 3 • Investigative Skills
Co-curricular opportunities and Gatsby (careers) links	Climate-monitoring careers. GB4 (Linking curriculum learning to careers).	Construction and engineering careers. GB4 (Linking curriculum learning to careers).	Careers in sustainable energy. GB2 (Learning from careers and labour market information); GB4 (Linking curriculum learning to careers).	Materials science and engineering careers. GB4 (Linking curriculum learning to careers).	Healthcare careers. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Respect, Empathy and Courage:** Climate and energy promote stewardship and action for communities affected unequally.	**Resilience, Kindness and Honesty:** Calculations, waves and life science demand accuracy, perseverance and encouragement of others.	**Courage, Honesty and Forgiveness:** Models improve with evidence; mistakes support learning and fair energy choices.	**Respect, Empathy and Kindness:** Biology, materials and engineering show how science can serve the common good.	**Honesty, Resilience and Forgiveness:** Trustworthy practical science needs accurate data, improved methods, integrity and responsible collaboration.

*Cycles don't fit exactly into half term blocks therefore timings are approximate.

Sexey's School Science Curriculum Map

Year 10 Biology

Topics and links	Autumn Term	Spring Term	Summer Term
	Cycle A	**Cycle B**	**Cycle C**
	• Cells and Organisation • Cell division • Organisation and the digestive system	• Organisation and the digestive system • Organising Animals (review) and organising Plants • Respiration	• Photosynthesis • Human Nervous system • Adaptations, Interdependence and competition
Co-curricular opportunities and Gatsby (careers) links	Careers in microbiology. GB4 (Linking curriculum learning to careers).	Healthcare and fitness careers; sustainability and food-management careers. GB4 (Linking curriculum learning to careers).	Agriculture and horticulture; nervous-system healthcare; ecology and environmental-management careers. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Honesty, Respect and Kindness:** Cells, division and digestion encourage respect for life, truthful evidence and supportive conditions for flourishing.	**Empathy, Forgiveness and Resilience:** Organisation and respiration show interdependence; health contexts encourage compassion and constructive improvement after mistakes.	**Courage, Respect and Kindness:** Photosynthesis develops stewardship; nervous-system and adaptation topics promote sensitive discussion and care for living systems.

Sexey's School Science Curriculum Map

Year 10 Chemistry

	Autumn Term	Spring Term	Summer Term
Topics and links	**Cycle A** • Fundamentals of chemistry • Periodic Table • Structure and Bonding	**Cycle B** • Chemical Changes • Chemical Maths	**Cycle C** • Electrolysis • Energy Changes
Co-curricular opportunities and Gatsby (careers) links	Materials science and careers emerging in nanotechnology. GB2 (Learning from careers and labour market information); GB4 (Linking curriculum learning to careers).	Industrial chemistry careers linked to reacting masses. GB4 (Linking curriculum learning to careers).	Manufacturing and chemical-engineering careers linked to electrolysis. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Courage, Honesty and Respect:** The periodic table and bonding reveal order within complexity, encouraging evidence, humility and wonder at creation.	**Forgiveness, Resilience and Kindness:** Chemical change and calculations require persistence; accuracy reduces waste and supports fair use of resources.	**Empathy and Respect:** Electrolysis and energy choices affect communities and the environment, prompting stewardship and responsible innovation.

Sexey's School Science Curriculum Map

Year 10 Physics

Topics and links	Autumn Term		Spring Term		Summer Term	
	Cycle A		**Cycle B**		**Cycle C**	
	• Electrical Circuits • Electricity in the Home • Static Electricity (Triple Only)		• Molecules & Matter • Atomic Structure & Radioactivity • Medical Physics (Triple Only) • Nuclear Physics (Triple Only)		• Energy & Energy Resources • Mock revision • Introduction to Forces (Forces in balance)	
Co-curricular opportunities and Gatsby (careers) links	Careers working with electricity and electronics. GB4 (Linking curriculum learning to careers).	Household-appliance efficiency and electrical careers. GB4 (Linking curriculum learning to careers).	Materials science and engineering careers. GB4 (Linking curriculum learning to careers).	Radioactivity careers in manufacturing, medicine, research and nuclear power. GB4 (Linking curriculum learning to careers).	Nuclear-power careers. GB4 (Linking curriculum learning to careers).	Forces linked to materials science and engineering careers. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Courage and Respect:** Circuits prompt reflection on positive choices, guidance and support that overcome obstacles.	**Kindness and Forgiveness:** Electrical safety symbolises people and values that protect us and help recovery.	**Empathy and Kindness:** Particles and vacuums prompt care for unheard or isolated voices.	**Honesty, Courage and Respect:** Radioactivity requires evidence, consent and responsible judgement about medicine, energy and peace.	**Respect and Empathy:** Energy choices raise stewardship, fairness and responsibility to future generations.	**Resilience, Forgiveness and Honesty:** Forces and revision develop perseverance, self-assessment and learning from mistakes.

*Cycles don't fit exactly into half term blocks therefore timings are approximate.

Sexey's School Science Curriculum Map

Year 11 Biology

Topics and links	Autumn Term	Spring Term	Summer Term
	Cycle A	**Cycle B**	**Cycle C**
	• Hormonal coordination • Homeostasis in action (triple) • Reproduction	• Variation and Evolution • Genetics and Evolution • Organising an Ecosystem	• Biodiversity and ecosystems • Revision • Exams
Co-curricular opportunities and Gatsby (careers) links	Healthcare careers linked to hormonal control. GB4 (Linking curriculum learning to careers).	Genetics and microbiology; ecology and environmental-management careers. GB4 (Linking curriculum learning to careers).	Ecology and environmental-management careers. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Empathy, Respect and Courage:** Hormones, homeostasis and reproduction affirm dignity, consent and respectful engagement with ethical and religious views.	**Honesty and Forgiveness:** Genetics and evolution show evidence refining ideas; difference is discussed without stigma and misconceptions are corrected fairly.	**Resilience, Kindness and Courage:** Biodiversity develops stewardship; revision and examinations promote mutual support, integrity and calm perseverance.

Sexey's School Science Curriculum Map

Year 11 Chemistry

Topics and links	Autumn Term	Spring Term	Summer Term
	Cycle A	**Cycle B**	**Cycle C**
	• Earth's Atmosphere • Earth's Resources • Organic Chemistry	• Rates and Equilibrium • Analysis • Using Resources (Triple Only)	• Revision and Exams
Co-curricular opportunities and Gatsby (careers) links	Careers in oil extraction and refinement; sustainability and management of Earth's resources. GB2 (Learning from careers and labour market information); GB4 (Linking curriculum learning to careers).	Chemical-analysis and research careers; industrial chemistry links. GB4 (Linking curriculum learning to careers).	Chemical-analysis and research careers. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Respect, Empathy and Kindness:** Atmosphere, resources and organic chemistry promote stewardship and reflection on effects upon neighbours and future generations.	**Honesty, Courage and Forgiveness:** Rates, equilibrium and analysis demand evidence and balanced judgement; Haber's legacy invites humility.	**Resilience and Kindness:** Revision and examinations develop honest self-assessment, perseverance and mutual support as responsible service.

Sexey's School Science Curriculum Map

Year 11 Physics

Topics and links	Autumn Term		Spring Term		Summer Term	
	Cycle A		**Cycle B**		**Cycle C**	
	• Forces in Balance finish • Motion • Forces and Motion • Forces and Pressure (Triple Only)		• Waves and Electromagnetic waves • Light (Triple Only)		• Electromagnetism • Space (Triple Only) • Exam preparation	
Co-curricular opportunities and Gatsby (careers) links	Forces linked to materials science careers. GB4 (Linking curriculum learning to careers).	Forces linked to engineering careers. GB4 (Linking curriculum learning to careers).	Lighting-technician careers for stage and television. GB4 (Linking curriculum learning to careers).	Photography, medicine and communications careers linked to waves. GB4 (Linking curriculum learning to careers).	Electromagnetism careers in security, food service, medicine and communications. GB4 (Linking curriculum learning to careers).	Photography and communications careers linked to electromagnetic technologies. GB4 (Linking curriculum learning to careers).
Links with Sexey's Seven Values, our Christian ethos, and spiritual development opportunities	**Respect and Courage:** Action and reaction invite reflection on restraint rather than retaliation.	**Resilience and Kindness:** Motion and pressure encourage support and perseverance when progress feels opposed.	**Respect and Courage:** Light and waves inspire wonder and respectful scientific and spiritual reflection.	**Empathy and Honesty:** Imaging and communications require evidence, compassion, consent and respect for patients.	**Kindness and Respect:** Electromagnetism suggests unseen influences such as encouragement, friendship and faith.	**Forgiveness, Resilience and Courage:** Space inspires humility; exam preparation develops integrity, learning from mistakes and calm perseverance.

*Cycles don't fit exactly into half term blocks therefore timings are approximate.

Sexey's School Science Curriculum Map

Year 12 Biology Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Basic Components of living systems • Biological molecules • Plasma membranes • Enzymes		• Cell division • Communicable diseases • Exchange surfaces and breathing • Transport in animals		• Transport in plants • Classification and evolution • Biodiversity • (Summer work: Populations and sustainability)	
Cross-curricular opportunities and Gatsby (careers) links	Chemistry: bonding and biological molecules. Explore how biochemists use molecular structure to explain enzyme activity (GB4).	Mathematics: microscopy scales and enzyme-rate graphs. Compare laboratory technician and biomedical scientist roles, training routes and current vacancies (GB2, GB4).	Mathematics: interpreting infection data and evaluating evidence. Use an outbreak case study to explain microbiology and epidemiology careers (GB4).	Physics: diffusion, pressure and fluid flow. Explain how respiratory physiologists and cardiac physiologists use exchange and transport concepts (GB4).	Geography: habitats, sampling and environmental change. Investigate how ecologists assess biodiversity and inform conservation decisions (GB4).	Mathematics: analysing population and biodiversity data. Compare conservation and environmental consultancy routes using current job profiles and vacancies (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Honesty and Respect** Record observations accurately and recognise the limits of biological models. Reflect on the complexity of living systems and the responsibility that knowledge brings.	**Resilience, Kindness and Forgiveness** Share laboratory roles fairly and improve investigations after errors. Patient support for others expresses Christian care and enables everyone to contribute.	**Empathy, Courage and Respect** Discuss infectious disease without blame or stigma. Consider how public-health choices protect vulnerable people, linking evidence-based action to love of neighbour.	**Kindness, Honesty and Empathy** Use exchange and transport topics to consider compassionate healthcare. Explain evidence clearly and recognise the dignity of people living with illness.	**Respect and Courage** Discuss evolution through scientific evidence while respecting personal beliefs. Reflect on the diversity of life and the meaning people find in the natural world.	**Empathy, Kindness and Resilience** Evaluate conservation choices and competing needs. Connect sustainability to Christian stewardship and responsibility for communities and future generations.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

Sexey's School Science Curriculum Map

Year 12 Chemistry Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Atoms, ions and compounds • Amount of substance • Acids and Redox • Electrons and Bonding • Shape of molecules and Intermolecular forces • Periodicity • Basic concepts of organic chemistry		• Reactivity trends • Enthalpy • Reaction Rates • Alkanes • Alkenes • Alcohols • Haloalkanes		• Equilibrium • Organic synthesis • Spectroscopy • Rates of Reaction • Aromatic chemistry	
Cross-curricular opportunities and Gatsby (careers) links	Physics: atomic structure and electron energy levels. Explain how analytical chemists use composition and bonding to identify substances (GB4).	Mathematics: moles, ratios and quantitative measurements. Compare chemical laboratory and quality-control roles, entry routes and current vacancies (GB2, GB4).	Physics: energy changes and reaction rates. Use process conditions to explain how chemical engineers balance yield, energy use and production rate (GB4).	Biology: alcohols and organic molecules. Explore pharmaceutical and industrial chemists' use of organic reactions in product development (GB4).	Physics: spectroscopy. Computing: interpreting instrumental data. Use an identification problem to explain forensic and analytical chemistry work (GB4).	Mathematics: rate graphs and equilibrium models. Compare synthesis and process-development careers using current degree and apprenticeship information (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Honesty, Courage and Respect** Use evidence to test atomic and bonding models. Reflect on the order and complexity of matter while respecting different interpretations of meaning.	**Resilience, Kindness and Forgiveness** Report measurements honestly and correct calculation errors constructively. Share practical responsibilities, expressing Christian care through safe and supportive work.	**Respect and Empathy** Evaluate the energy and resource costs of industrial reactions. Connect efficient production to stewardship and concern for people affected by pollution.	**Courage, Honesty and Kindness** Consider the benefits and harms of organic chemicals using evidence. Discuss chemists' responsibility to protect health and serve the common good.	**Honesty and Respect** Interpret spectra cautiously and distinguish a confident identification from uncertainty. Reflect on the trust placed in scientific evidence in medicine and justice.	**Resilience, Empathy and Kindness** Improve synthetic routes while considering waste and access to useful products. Link responsible innovation to care for neighbours and future generations.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

Sexey's School Science Curriculum Map

Year 12 Geology Key Stage 5

	Autumn Term		Spring Term		Summer Term	
	Cycle A	**Cycle B**	**Cycle C**	**Cycle D**	**Cycle E**	**Cycle F**
Topics and links	• Minerals and rocks: identify the building blocks of rocks and establish foundations for later study.	• Fossils: relate organisms to environments and interpret the history of life. • Earth structure: combine evidence to infer the Earth's internal structure.	• Plate tectonics: link Earth's heat loss to surface features. • Geological structures: explain structures through regional and global processes.	• Sedimentary environments in time: use present-day processes to interpret the rock record.	• Geochronology: correlate dating techniques to establish ages and sequences of geological events.	• Applied sedimentology: build predictive models using modern analogues; recognise processes without modern equivalents.
Cross-curricular opportunities and Gatsby (careers) links	Chemistry: mineral composition and crystal structures. Explain how mineralogists and laboratory technicians identify minerals and rocks (GB4).	Biology: fossils and adaptation. Physics: seismic waves. Compare palaeontology and geophysics careers, training routes and current opportunities (GB2, GB4).	Physics: heat transfer, stress and deformation. Use tectonic evidence to explore structural geology and geophysical survey work (GB4).	Geography: rivers, coasts and sediment transport. Explain how sedimentologists reconstruct environments for environmental and engineering investigations (GB4).	Physics: radioactive decay. Mathematics: dating uncertainty. Explore geochronology and analytical laboratory roles through a rock-dating case study (GB4).	Mathematics and computing: predictive models and spatial data. Compare environmental and subsurface geology roles using current job profiles, training routes and vacancies (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Honesty, Respect and Resilience** Describe rocks before drawing conclusions; acknowledge uncertainty. Reflect on the variety of Earth materials and the patience needed to understand them.	**Courage, Respect and Kindness** Use fossils and Earth structure to explore deep time and the history of life. Discuss evidence and personal beliefs respectfully, valuing freedom of thought.	**Empathy, Honesty and Courage** Distinguish tectonic evidence from speculation. Consider how understanding an active planet can support communities and responsible care for neighbours.	**Respect, Resilience and Forgiveness** Test interpretations of past environments against evidence and revise them when needed. Reflect on change, continuity and humanity's place in Earth history.	**Honesty and Respect** Communicate the assumptions and uncertainty in geological dating. Deep time provides opportunities for awe, humility and reflection on human timescales.	**Kindness, Empathy and Courage** Evaluate the limits of predictive models and effects of resource decisions. Connect environmental responsibility to stewardship and care for future generations.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

SEXEY'S SCHOOL

Sexey's School Science Curriculum Map

Year 12 Physics Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Foundations of physics • Motion • Forces in action • Work, energy and power • Materials • Laws of motion and momentum		• Charge and current • Energy, power and resistance • Electrical circuits (begin) • Waves 1 • Waves 2		• Electrical circuits (complete) • Quantum physics • AS consolidation and assessment • Thermal physics • Ideal gases • Circular motion • Assessment review and transition to A2	
Cross-curricular opportunities and Gatsby (careers) links	Mathematics: vectors, gradients and areas under motion graphs. Use a stopping-distance case study to explain how automotive engineers use motion data (GB4).	Mathematics and design technology: moments, stress and material selection. Compare a civil engineer's and a materials technician's roles, entry routes and current local vacancies (GB2, GB4).	Computing and mathematics: I–V data analysis; wave graphs. Explain how electrical engineers test components and how optical engineers use refraction (GB4).	Music: harmonics and stationary waves. Electronics: sensing circuits. Investigate an acoustic engineer's work on room design or an electronics engineer's sensor design (GB4).	Chemistry: photons and atomic energy. Mathematics: interpreting experimental evidence. Link photoelectric devices to photonics careers; compare degree and apprenticeship entry requirements using current profiles (GB2, GB4).	Mathematics: radians and circular motion. Chemistry: kinetic theory and gases. Explain how thermal engineers model heat transfer and aerospace engineers analyse turning motion (GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Honesty, Courage and Respect** Report uncertainty and anomalous results openly; challenge explanations with evidence. Reflect on the order revealed by physical models while respecting different worldviews.	**Resilience, Kindness and Forgiveness** Share practical roles fairly and improve methods after errors. Discuss engineers' responsibility to protect people through safe design, linking care for others to Christian service.	**Honesty, Respect and Empathy** Use measured evidence to evaluate electrical performance. Consider how access to electricity affects opportunity and dignity, linking responsible technology to love of neighbour.	**Kindness, Courage and Respect** Explain wave ideas patiently and consider hearing needs in acoustic design. Reflect on music, silence and human experience as opportunities for personal meaning and connection.	**Honesty, Courage and Resilience** Explain why evidence led to revisions of classical models. Practise intellectual humility; distinguish testable scientific explanations from wider questions of meaning and belief.	**Respect, Empathy and Kindness** Evaluate efficient heating and its effects on households and the environment. Connect stewardship to fair use of resources and responsibility towards future generations.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

Sexey's School Science Curriculum Map

Year 13 Biology Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Neuronal Communication • Hormonal communication • Respiration • Energy for biological processes		• Plant responses • Genetics of living systems • Patterns of inheritance and variation • Manipulating genomes		• Cloning and biotechnology • Ecosystems	
Cross-curricular opportunities and Gatsby (careers) links	Physics: electrical signals and energy transfers. Link neuronal communication to neurophysiology and medical research roles (GB4).	Chemistry: respiration and hormone action. Compare clinical biochemistry and pharmaceutical research careers using current entry requirements (GB2, GB4).	Mathematics: probability and inheritance patterns. Explore how genetic counsellors explain inherited conditions and uncertainty (GB4).	Computing: analysing DNA sequences and biological data. Investigate bioinformatics and genomics roles; compare current training routes and vacancies (GB2, GB4).	Chemistry: biotechnology and production processes. Explain how biotechnologists use cells and enzymes in manufacturing (GB4).	Geography: ecosystems and conservation decisions. Use an ecosystem-management case study to explore environmental consultancy; compare current career information (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Empathy and Respect** Discuss neurological and hormonal conditions sensitively. Recognise individual dignity and challenge stigma through informed, compassionate explanations.	**Honesty, Courage and Resilience** Evaluate evidence about energy and biological function. Acknowledge uncertainty, revise explanations and value the patient work of scientific enquiry.	**Kindness, Empathy and Respect** Discuss inherited conditions without defining people by a diagnosis. Consider privacy and sensitive communication as expressions of care for others.	**Honesty, Courage and Respect** Evaluate genome manipulation using evidence and ethical reasoning. Explore consent, fairness and differing beliefs while recognising shared responsibilities.	**Empathy, Courage and Kindness** Weigh cloning and biotechnology applications against welfare and social consequences. Connect responsible innovation to compassionate service and the common good.	**Respect, Resilience and Forgiveness** Use ecosystem study to reflect on interdependence and stewardship. Respond constructively to feedback and support peers as examinations approach.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

SEXEY'S SCHOOL

Sexey's School Science Curriculum Map

Year 13 Chemistry Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Rates of reaction • Equilibrium • Acids, Bases and pH • Buffers and Neutralisation • Carbonyls and Carboxylic Acids • Amines, Amino Acids and Polymers		• Enthalpy and Entropy • Redox and Electrode Potentials • Transition Elements • Organic Synthesis • Chromatography and spectroscopy		• Revision and practical skills review • Synoptic questions and past-paper practice • External examinations	
Cross-curricular opportunities and Gatsby (careers) links	Biology: pH regulation and buffers. Mathematics: logarithms. Explain clinical biochemists' and formulation chemists' use of pH and buffering (GB4).	Biology: amino acids. Design technology: polymer properties. Compare pharmaceutical and polymer chemistry careers, qualifications and current opportunities (GB2, GB4).	Physics: electrochemical cells and energy. Investigate battery development and catalyst design as applications of chemistry in energy technology (GB4).	Computing: chromatograms and spectra. Use a purity-testing case study to explore analytical chemistry and quality assurance roles (GB4).	Mathematics and literacy: evaluate data and justify conclusions. Revisit industrial and medical applications through synoptic examination questions (GB4).	Independent study: evidence evaluation and communication. Where time permits, compare chosen chemistry-related courses and apprenticeships using current information (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Empathy, Respect and Honesty** Use buffers and pH to consider how chemistry supports health. Communicate evidence accurately and recognise the needs and dignity of patients.	**Courage, Kindness and Respect** Evaluate polymer benefits alongside environmental costs. Consider fair access to medicines and the responsibilities attached to chemical innovation.	**Honesty, Empathy and Respect** Weigh evidence about batteries, catalysts and resource demand. Link energy choices to Christian stewardship and their effects on distant communities.	**Resilience, Courage and Honesty** Investigate unexpected analytical results and revise explanations. Reflect on scientific humility and the consequences of reliable or misleading evidence.	**Resilience, Forgiveness and Kindness** Use feedback to correct misconceptions without shame. Offer patient peer support and connect practical help to Christian compassion.	**Honesty, Courage and Respect** Complete examinations with integrity. Reflect on vocation, hope and how future scientific work can contribute to the wellbeing of others.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

SEXEY'S SCHOOL

Sexey's School Science Curriculum Map

Year 13 Geology Key Stage 5

	Autumn Term		Spring Term		Summer Term	
	Cycle A	**Cycle B**	**Cycle C**	**Cycle D**	**Summer Term**	
Topics and links	• Fluids: groundwater movement and storage. • Igneous petrology: magma evolution and layered intrusions. • Metamorphic petrology: index minerals, causes of change and regional histories.	• Mining: balance essential resource extraction with environmental and social impacts. • Geohazards: assess impacts, preparedness, prediction and mitigation.	• Geotechnics: test ground weaknesses to prevent engineering failures. • Engineering geology: investigate the geological challenges of construction projects.	• Basin analysis concepts: Earth's change through time, including changes in life. • Basin analysis in practice: apply prior knowledge to reconstruct basin histories.	• Revision and practical skills review • Synoptic questions and past-paper practice • External examinations	
Cross-curricular opportunities and Gatsby (careers) links	Physics: groundwater flow, temperature and pressure. Chemistry: mineral reactions. Explore hydrogeologists' work on water supplies and petrologists' investigation of rock histories (GB4).	Geography: resource use and disaster impacts. Compare mining and geohazard careers using current vacancies; evaluate the skills needed to communicate risk (GB2, GB4).	Physics: forces and material strength. Mathematics: evaluating test data. Explain engineering geologists' and geotechnical engineers' contribution to safe foundations and construction (GB4).	Computing and geography: geological maps and basin models. Investigate how subsurface geoscientists combine evidence when assessing basins for resources or storage (GB4).	Mathematics and literacy: interpret geological evidence and defend conclusions. Revisit environmental and engineering applications through synoptic revision questions (GB4).	Independent study: evaluating models and uncertainty. Where time permits, compare geology-related courses and apprenticeships using current careers information (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Respect, Kindness and Honesty** Consider groundwater as a shared resource and the consequences of contamination. Connect responsible investigation to stewardship and the needs of communities.	**Empathy, Courage and Respect** Weigh mining benefits against environmental and social costs. Consider support for people affected by hazards through the Good Samaritan's example of practical care.	**Honesty, Resilience and Kindness** Report weak ground and uncertain test results openly. Reflect on professional responsibility for safe construction and protecting people who depend on it.	**Courage, Respect and Honesty** Evaluate competing basin histories using evidence. Reflect on long-term change and the responsibility to communicate uncertainty in decisions affecting others.	**Resilience, Forgiveness and Kindness** Use revision feedback constructively and share explanations patiently. Connect mutual encouragement and practical help to Christian compassion.	**Honesty, Courage and Empathy** Prepare for examinations with integrity and consideration for peers. Reflect on vocation and how geoscience can serve communities and protect the environment.

Timings are approximate. Practical skills, assessment and feedback are embedded throughout. GB2: learning from career and labour market information. GB4: linking curriculum learning to careers. Career activities are planned opportunities.

Sexey's School Science Curriculum Map

Year 13 Physics Key Stage 5

	Autumn Term		Spring Term		Summer Term	
Topics and links	• Oscillations • Gravitational fields • Stars • Electric fields • Magnetic fields • Particle physics		• Cosmology • Capacitance • Radioactivity • Nuclear physics • Medical imaging • Synoptic consolidation • Complete new content by the end of Spring Term		• Targeted revision and practical review • Synoptic questions and timed topic tests • Full past papers, feedback and improvement • External examinations and support up to each paper	
Cross-curricular opportunities and Gatsby (careers) links	Mathematics: sinusoidal models and inverse-square relationships. Apply resonance to vibration control and fields to charged-particle motion; identify mechanical and accelerator-engineering roles (GB4).	Chemistry: spectra and subatomic structure. Computing: astronomical data. Compare research and technical roles in astronomy and particle physics, including current training routes and vacancies (GB2, GB4).	Mathematics: exponential decay and logarithms. Geography: energy choices. Use isotope-production and nuclear-energy case studies to explain nuclear engineering and radiation-protection work (GB4).	Biology: diagnosis and body structures. Electronics: capacitor discharge. Explain roles in medical physics, diagnostic radiography and sonography; compare training requirements using current career information (GB2, GB4).	Mathematics and literacy: evaluate graphs, justify assumptions and communicate reasoning. Use synoptic engineering and healthcare questions to revisit how physicists solve problems professionally (GB4).	Independent study: evaluate evidence and communicate precise conclusions. Where time permits before final examinations, compare chosen physics-related progression routes using current course and apprenticeship information (GB2, GB4).
Links with Sexey's Seven Values, our Christian ethos and spiritual development opportunities	**Honesty, Courage and Resilience** Test models of oscillations and fields against data; acknowledge limitations. Reflect on how evidence allows us to understand phenomena beyond direct observation.	**Respect, Courage and Kindness** Use stellar evolution to reflect on scale, time and humanity's place in the Universe. Discuss scientific and religious perspectives respectfully, without presenting them as equivalent kinds of explanation.	**Honesty, Empathy and Respect** Weigh evidence on nuclear benefits, risks and waste. Consider responsibility to distant communities and future generations through Christian stewardship and care for neighbours.	**Empathy, Kindness and Respect** Consider patient dignity, consent and fair access when comparing imaging methods. Relate compassionate use of science to the Good Samaritan's example of practical care.	**Resilience, Forgiveness and Honesty** Use feedback to correct misconceptions without shame; acknowledge what still needs work. Offer supportive peer explanations, expressing compassion through practical help.	**Courage, Honesty and Kindness** Prepare and complete examinations with integrity; support peers without compromising independent work. Reflect on vocation, hope and how future study or employment may serve others.

Timings are approximate.