

Daffodil Grammar School for Girls

Curriculum Plan - Science

Key Stage 3 and Key Stage 4 Scheme of Work

Key stage / year groups KS3-KS4 (Years 7-11)	Time allocation KS3: 4 x 50-minute periods weekly; KS4: 6 x 50-minute periods weekly.	Delivery model Integrated KS3 Science and GCSE Biology, Chemistry and Physics with practical enquiry throughout.	Grouping / pathway KS3 mixed ability; KS4 grouping informed by GCSE pathway, attainment and support need.
Curriculum coverage Final subject scheme of work for the stated key stage(s).	Assessment cycle Regular formative checks, summative assessment and targeted intervention.	Review cycle Annual curriculum review, supported by termly assessment analysis.	Version 1.2
Intent Clear subject purpose with ambitious knowledge, skills, literacy and character development.	Implementation Cumulative sequencing across the key stage(s), with deliberate retrieval and careful modelling.	Assessment Response Regular formative checks, summative assessments and question-level analysis to guide intervention.	

1. Curriculum intent

Science at Daffodil Grammar School for Girls is designed to help pupils build powerful knowledge, disciplined habits of thinking and confidence as independent learners.

- Develop secure scientific knowledge and conceptual understanding in Biology, Chemistry and Physics.
- Understand the nature, processes and methods of science through scientific enquiry.
- Build scientific literacy and numeracy to interpret data, evaluate evidence and make informed decisions.
- Prepare thoroughly for GCSE Combined Science, Triple Science for selected pupils and further STEM study.
- Appreciate the beauty, order and complexity of creation, linking to tadabbur, khilafah and responsibility.
- Develop curiosity, resilience and critical thinking, seeing science as relevant to health, environment, technology and society.

2. Curriculum architecture and sequencing principles

Curriculum design principle	What this looks like in practice
Cumulative knowledge	Core ideas are revisited across years so pupils build secure schema rather than isolated topic knowledge.

Curriculum design principle	What this looks like in practice
Explicit teaching	Teachers model expert thinking, subject vocabulary, worked examples and high-quality responses before pupils practise independently.
Retrieval and retention	Do Now tasks, quizzes and review questions deliberately revisit prior learning to strengthen long-term memory.
Challenge with support	Pupils receive scaffolds, examples and modelling without reducing ambition; stretch tasks extend high attainers.
Assessment-led intervention	Assessment outcomes are analysed to identify misconceptions, plan re-teaching and target support.

Core principles across KS3

- Study a balanced mix of Biology, Chemistry and Physics each year.
- Develop practical and working scientifically skills in every topic.
- Revisit big ideas: particles, energy, forces, cells, interdependence and reactions.
- Use evidence, data and models to explain natural phenomena.
- Link science to health, environment, technology, ethics and stewardship.

3. KS3 scheme of work

Year 7 - Introduction to Secondary Science

Overall intent: Establish scientific skills, safety routines and key concepts in all three disciplines.

Term	Strand	Unit / key concepts	Skills and knowledge	Key assessments
Autumn 1	Intro + Biology	Working Scientifically & Lab Skills; Cells, Tissues & Organs	Lab safety; Bunsen burner; measuring; cell structure; plant/animal cells; microscopes and organisation.	Baseline test; practical skills checklist; cells test.
Autumn 2	Chemistry	Particles & States of Matter	Particle model; changes of state; qualitative heating/cooling curves; diffusion and gas pressure intro.	Particle model test.
Spring 1	Physics	Forces & Motion (1)	Contact/non-contact forces; newton meter; balanced/unbalanced forces; speed = distance/time.	Forces test; practical write-up.
Spring 2	Biology	Human Reproduction & Adolescence	Puberty; reproductive systems; fertilisation, pregnancy and birth, taught sensitively with Islamic ethos and statutory RSE.	Short written assessment; factual quiz.

Term	Strand	Unit / key concepts	Skills and knowledge	Key assessments
Summer 1	Chemistry	Mixtures & Separation	Pure/impure substances; dissolving; filtration, evaporation, distillation, chromatography; apparatus diagrams.	Practical assessment; separation methods test.
Summer 2	Physics	Energy (1)	Energy stores/transfers; conservation of energy qualitatively; intro to work done and power.	End-of-year integrated exam.

Year 8 - Developing breadth and application

Overall intent: Deepen key ideas and introduce reactions, ecosystems and electricity.

Term	Strand	Unit / key concepts	Skills and knowledge	Key assessments
Autumn 1	Biology	Ecology & Interdependence	Food chains/webs; predators/prey; competition; adaptations; habitats; human impact, pollution, climate change and stewardship.	Ecology test; data interpretation.
Autumn 2	Chemistry	Elements, Compounds & Reactions	Atoms, elements, compounds, molecules; word equations; signs of reactions; combustion, oxidation, thermal decomposition.	Topic test; practical write-up.
Spring 1	Physics	Electricity (1)	Current, voltage; series/parallel circuits; symbols and diagrams; qualitative resistance.	Circuit practical; written test.
Spring 2	Biology	Healthy Lifestyle & Body Systems	Nutrition, balanced diet, lifestyle; gas exchange, breathing, exercise/respiration, smoking, drugs and health.	Short test; extended response.
Summer 1	Chemistry	Acids, Alkalis & Periodic Table (1)	pH, indicators, neutralisation, acid reactions; groups/periods and metals/non-metals.	Neutralisation practical; topic test.
Summer 2	Physics	Light & Sound	Waves qualitatively; amplitude, wavelength, frequency; reflection/refraction/lenses; sound, pitch and loudness.	End-of-year cumulative exam.

Year 9 - Bridging to GCSE

Overall intent: Consolidate KS3 content and introduce abstract GCSE-style ideas and calculations.

Term	Strand	Unit / key concepts	Skills and knowledge	Key assessments
Autumn 1	Biology	Cells, Genetics & Inheritance	Mitosis concept; DNA, genes, chromosomes; simple monohybrid inheritance and Punnett squares.	Genetics test; GCSE-style questions.
Autumn 2	Chemistry	Particle Model (2) & Atomic Structure	Protons, neutrons, electrons; atomic/mass number; isotopes intro; internal energy qualitatively.	Atomic structure test.
Spring 1	Physics	Forces & Motion (2)	Speed, distance-time graphs; acceleration concept/calculations; friction, drag and terminal velocity.	Motion test; graph interpretation.
Spring 2	Chemistry	Reactivity & Periodic Table (2)	Group 1 and 7 patterns; reactivity and displacement; metals/non-metals; basic bonding ideas.	Reactivity test.
Summer 1	Biology	Organisation & Disease	Digestive and circulatory systems; pathogens, immune response; vaccination and antibiotics; resistance intro.	End-of-topic test.
Summer 2	Physics	Energy (2) & Review	Energy transfers, efficiency; renewable/non-renewable resources; environmental considerations and exam skills.	End-of-Year 9 GCSE-style exam.

4. KS4 scheme of work

Year 10 - Core GCSE content

Overall intent: Cover most Combined Science specification content across Biology, Chemistry and Physics, with required practicals.

Term	Focus	Skills / knowledge emphasis	Key assessments
Autumn 1	Biology: Cell biology & Organisation (1) Chemistry: Atomic structure & periodic table Physics: Energy (1)	Microscopy/cells; atomic structure; energy stores, transfers and conservation.	Topic tests; practical assessment such as microscopy and SHC.
Autumn 2	Biology: Organisation (2) Chemistry: Bonding & structure Physics: Energy resources & efficiency	Circulation/health; properties of matter; resources and efficiency.	Combined GCSE-style B/C/P test.
Spring 1	Biology: Infection & response Chemistry: Quantitative chemistry Physics: Electricity circuits/resistance	Pathogens, immunity, vaccination; calculations; current, voltage and resistance.	Mock-style paper on Autumn/Spring content.
Spring 2	Biology: Bioenergetics Chemistry: Chemical changes (acids/metals) Physics: Particle model	Photosynthesis, respiration; acids/metals; density, states and changes of state.	Topic tests; required practical write-ups.
Summer 1	Biology: Review/extension Chemistry: Electrolysis intro Physics: Electricity applications	Mop-up, extension and GCSE practice across strands.	Year 10 exams.
Summer 2	Mop-up and consolidation	Missed content, Triple extension where relevant and diagnostic analysis.	Tiering/pathway discussion.

Year 11 - Remaining content and exam preparation

Overall intent: Complete remaining specification content and move into intensive revision and exam practice.

Term	Focus	Skills / knowledge emphasis	Key assessments
Autumn 1	Biology: Homeostasis & response Chemistry: Energy changes/rates Physics: Forces	Nervous/hormonal control; exothermic/endothermic, rates; motion and Newton's laws.	PPEs: full Combined Science set.
Autumn 2	Biology: Inheritance, variation & evolution Chemistry: Chemical analysis Physics: Waves	Genetics/evolution; chromatography and tests; wave properties and EM spectrum.	Topic tests and targeted re-teach.
Spring 1	Biology: Ecology Chemistry: Atmosphere & using resources Physics: Magnetism/electromagnetism	Human impact/stewardship; global issues and sustainable development; electromagnetism and Space for Triple if applicable.	Additional mock papers; strand assessments.
Spring 2	Revision across all sciences	All Biology, Chemistry and Physics papers; timed past papers and exam technique.	Final in-class mocks.

Term	Focus	Skills / knowledge emphasis	Key assessments
Summer 1	Public Examinations	External GCSE Science examinations.	External GCSE papers.

5. Assessment, feedback and intervention

Area	School expectation
KS3 assessment	At least one significant summative assessment per term, supported by low-stakes retrieval and teacher assessment of key pieces. End-of-year examinations are cumulative and increasingly GCSE-style by Year 9.
KS4 assessment	Half-termly exam-style assessment, Year 10 internal exams and Year 11 PPEs. Question-level analysis informs re-teaching, intervention and homework priorities.
Feedback response	Pupils complete improvement tasks after assessment, including corrections, refining, misconception practice and targeted retrieval.
Intervention	Support is planned from assessment evidence: small-group intervention, guided practice, targeted homework and stretch pathways.

6. Inclusion, SEND and EAL

- Scaffolds such as sentence starters, writing frames, worked examples, visual prompts and chunked tasks are used where appropriate.
- Questioning and tasks are tiered so all pupils can access the core learning while high attainers are stretched.
- Vocabulary is explicitly taught, modelled and revisited; key words and command words are highlighted in lessons and assessments.
- Pupils with SEND receive appropriate support without diluting curriculum ambition.
- EAL pupils are supported through glossaries, visual models, paired talk, model answers and explicit Standard English / academic language.

7. Subject-specific enrichment, homework and wider links

Practical science and working scientifically

Regular short and extended practical investigations. Skills: planning variables and fair testing; measurement with appropriate equipment/units; analysis through tables, graphs and means; evaluation of reliability, accuracy, validity and improvements.

Maths and literacy in Science

Standard form, significant figures, rearranging formulae, graph gradients, percentages, ratios and proportional reasoning. Literacy includes terminology, methods, results, conclusions, evaluations and PEEL extended responses.

SMSC, British values and Islamic ethos

Ethical issues such as vaccination, climate change and resources; contributions from different cultures; critical thinking about evidence and pseudoscience; reflection on creation, stewardship and honest data reporting.

Homework and independent study

- Weekly homework consolidates current learning and includes spaced retrieval from previous units.
- KS4 homework includes exam-style questions, structured revision and independent improvement tasks.
- Pupils are encouraged to maintain organised revision materials, including key knowledge, worked examples and reflections on feedback.

8. Quality assurance checklist

QA focus	Evidence to review	Frequency
Curriculum coverage	Schemes of work, lesson sequences, assessment calendar and pupil books.	Termly
Standards of work	Book looks focused on presentation, challenge, feedback response and progression over time.	Half-termly
Assessment quality	Moderation of assessments, mark schemes and question-level analysis.	After each assessment window
Inclusion and support	SEND/EAL adaptations, intervention records and pupil progress evidence.	Termly
Teacher development	Planning review, lesson visits, CPD priorities and shared exemplars.	Ongoing