The GTS Biology Curriculum

Our intent

"The ability of people to understand the world in which they live and work increasingly depends on their understanding of scientific ideas and associated technologies and social questions. For most people such understanding will come mainly through education."

Sir Paul Nurse, President of the Royal Society

We want our students to

- Be scientists
- Develop skills as well as knowledge
- Nurture a love of science
- Be curious
- Be resilient
- Be challenged
- Be scientifically literate
- Make better than 'expected' progress

Our intent is to support and prepare student for their next steps by

- Inspiring curiosity and fostering an interest in world of science
- Observing scientific phenomena and developing a conceptual understanding of scientific ideas and the world around them
- Building and developing skills and knowledge through carefully designed practical opportunities and sequenced lessons so that pupils can take advantage of opportunities, become scientifically literate and recognise chances for responsibility within their learning
- Encouraging and modelling a culture of lifelong learning through a love and interest in the natural world

"Science and everyday life cannot and should not be separated"

Rosalind Franklin

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There is an alternative curriculum was put in place for students who were not secondary ready in year 7 which aims to reinforce and embed KS2 learning and begin the progression to KS3.
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Curriculum Map

Y7	Y8	Y9 (2025 onward)	Y10 (2025-2027)	Y11 (2025/26)
Cells	Variation	Cell biology	Organisation (2)	Ecology (2)
Digestion	Inheritance	Organisation	Bioenergetics	Inheritance
Movement	Evolution		Homeostasis	Variation
Breathing	Interdependence		Ecology (1)	Evolution
Respiration	Plant reproduction			
Human Reproduction	Photosynthesis			

KS4 Specification links:

https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF

https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF

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Biology year 7-11	
Content	**Revisit**
Cell structure, function. Specialised cells, looking at cells.	KS2 links
Digestion introduction, including organs and their role, diffusion, intro to enzymes.	KS2 links
Movement, function of skeleton, antagonistic muscle pairs.	KS2 links
Breathing mechanisms, air composition inhale vs exhale, links to cardiovascular organ system, diffusion, lung structure and function.	KS2 links Chem link
Respiration, energy is release, food that provides energy, difference between respiration and breathing	KS2 links
Human reproduction, organs, development of embryo, stem cell basics, menstruation basics introduction.	KS2 links
Variation (8)- what is variation including recognising features of variation between humans and other organisms, what gives rise to variation, why would variation be important, what can reduce variation.	Recap reproduction
Inheritance- introduction to DNA, environmental vs genetic, using genetic crosses/punnet squares.	Recap cell (7), recap reproduction (7), Recap variation (8)
Evolution- survival of the fittest, introduction to Darwin's theory of evolution, looking at evidence.	Recap cell (7), recap reproduction (7), Recap variation (8) Recap Inheritance (8)
Interdependence- adaptations, feeding relationships, food chains/webs.	Recap variation (8)
Plants-reproduction, photosynthesis, structure.	KS2 Links.
Cell Biology - Animal cells Plant cells Required Practical - Using a light microscope Eukaryotes and prokaryotes Cell differentiation and specialisation Microscopy Culturing microorganisms BIO only Required practical - Effect of antibiotics on bacterial growth BIO only Chromosomes Mitosis and the cell cycle Stem cells Diffusion Osmosis	Recap cells (7), reproduction (7), breathing (7), reproduction (7/8), movement (7), Links to respiration (7)

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Required practical - Osmosis Active transport	
Organisation 1- Organisational hierarchy Enzymes Required practical - Food tests Required practical - Enzymes The human digestive system The heart and blood vessels Blood Coronary heart disease Health issues The effect of lifestyle on some non-communicable diseases Plant tissues Plant organ system **Detection and identification of plant diseases BIO only** **Plant defence responses BIO only**	Recap cells (7), breathing (7), digestion (7) Reproduction (7/8), Links to respiration (7)
Infection & Response - Communicable infectious disease Plant organ system Viral diseases Bacterial diseases Fungal diseases Protist diseases Human defence systems Vaccination Antibiotics and painkillers Discovery and development of drugs **Producing monoclonal antibodies BIO only** **Use of monoclonal antibodies BIO only**	Recap cells (7), growing microorganisms (cell biology 9)
Organisation 2 **(year 10 2026 only)** Plant tissues Plant organ system **Detection and identification of plant diseases BIO only** **Plant defence responses BIO only**	Recap plants (8)
Bioenergetics- **Plant hormones- control and coordination BIO only**	Recap cells (7), respiration (7), breathing

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Required practical - Germination BIO only **Use of plant hormones** Photosynthetic reaction Rate of photosynthesis Required practical - Photosynthesis Uses of glucose from photosynthesis Aerobic and anaerobic respiration Response to exercise Metabolism	mechanism (7), photosynthesis, (8), circulatory system (9)
Homeostasis- Importance of homeostasis Structure and function of the nervous system Required practical - Reaction time **The brain BIO only** **The eye BIO only** **Control of body temperature BIO only** Human endocrine system Control of blood glucose concentration **Maintaining water and nitrogen balance in the body BIO only**	Physics link, cells (7,9), reproduction (7), bioenergetics (10), respiration, (7), organisation (9), interdependence (8), plant reproduction (8)
Ecology (1) Communities Required practical - Field investigations Abiotic factors Biotic factors Adaptations Levels of organization How materials are cycled Decomposition **Required practical - Decay BIO only** **Impact of the environmental change BIO only**	Interdepenedence (8)
Ecology (2)- Biodiversity Waste management Land use Deforestation Global warming	Recap variation (8), evolution (8), interdependence (8), plant reproduction (8),

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Maintaining biodiversity **Trophic levels BIO only** **Pyramids of biomass BIO only** **Transfer of biomass BIO only** **Factors affecting food security BIO only** **Farming techniques BIO only** **Sustainable fisheries BIO only** **Role of biotechnology BIO only**	
Inheritance, Variation and Evolution (11)- Hormones in human reproduction Contraception **The use of hormones to treat infertility HT only** **Negative feedback HT only** Sexual and asexual reproduction Meiosis **Advantages and disadvantages of sexual and asexual reproduction BIO only** DNA and the genome **DNA structure BIO only** Genetic inheritance Inherited disorders Sex determination Variation	Cells (7), cell biology (9), reproduction (7), variation (8), inheritance (8), evolution (8),
Evolution – Selective breeding Genetic engineering **Cloning BIO only** **Theory of evolution BIO only** **Speciation BIO only** **The understanding of genetics BIO only** Evidence for evolution Fossils Extinction Resistant bacteria Classification	Evolution and variation (8)

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