TRILOGY SCIENCE BIOLOGY CURRICULUM MAP

A. FORMAL KEY STAGE FOUR BIOLOGY GCSE LEVEL CURRICULUM

Core Threads	By the end of key stage FOUR we want all students of Biology to ***know*** and ***do*** the following key things: Confident knowledge & understanding of key terms in Biology; practical competency high for all required practical activities and experiments; interpretation & analysis of qualitative and quantitative data with reasoning; coherent conclusions; well-reasoned judgements; evaluate and refine practical procedure.
Prior Knowledge	In KS4, students of Biology will build on the following **prior learning**: Key Stage Three understanding of key processes, such as fundamental biological reactions of photosynthesis and respiration, living organisms relating to cell structures, ecosystems and cell structures; Key Stage Three skills of analysis and evaluation; maths skills, including calculating percentages and averages; simple evaluation of practical procedure; knowledge of key equipment; consideration of variables
Future Knowledge	The Curriculum in KS4 Biology will prepare students for the following **future learning**: Utilise knowledge in well-reasoned explanations; independently refine and evaluate practical procedure; analysis utilising wider maths skills and statistical tests

	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
Year 10	**T1**	Develop knowledge and offer well-reasoned judgement about Homeostasis. Use Required Practical – Reaction Times. Apparatus Techniques. Mathematics skills: interpret data to develop conclusions. Physiotherapist.	Communicable Disease and Homeostasis Test
	T2	Continue to develop knowledge & understanding about Homeostasis, offering well-reasoned judgements. Consolidation of prior knowledge of the cell cycle in preparation for more detailed focus on inheritance. Geneticist.	Communicable Disease and Homeostasis Test
	T3	Build on knowledge from Cells and DNA unit to develop a confident knowledge and understanding of Inheritance, Variation and Evolution, and apply to wider scenarios with depth of description. Hone interpretation and analysis of data with reasoning and coherent conclusions.	Homeostasis and Inheritance Test
	T4	Build on knowledge from previous relating to Transport. Focus on Inheritance, Variation and Evolution, developing confident knowledge and understanding, and application to wider scenarios. Focus on extended response and detailed descriptions. Draw coherent conclusions, offering well-reasoned judgements relating to genetic problems. Evolutionary Biologist.	Homeostasis and Inheritance Test
	T5	Review prior learning relating to classification, Develop knowledge & understanding, and well-reasoned judgements, about Bioenergetics: photosynthesis. Required Practical Photosynthesis interpretation and analysis of data with reasoning's and coherent conclusions and well-reasoned judgement evaluate and refine RP procedure. Environmental Scientist.	End of Year Examination
	T6	Bioenergetics: Respiration; confident knowledge and understanding, application to wider scenarios, depth of description. Focus on extended response. Respiratory Physiologist.	End of Year Examination
Year 11	**Term**	**KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED , AND LEARNT**	**Common Assessment End Points**
	T1	Build on knowledge from units on Organisation and Infection and Response and 7H and develop confident knowledge & understanding in Ecology. Required Practical Field Investigations to plan, implement Apparatus and Techniques. Develop sampling techniques and use them in more complex contexts, such as unfamiliar ecological habitats.	Year 11 Biology Mock Examination
	T2	Build on unit 7H, build on prior knowledge developing understanding which can give well-reasoned judgments relating to predator-prey relationships and adaptations. Environmental Scientist.	Year 11 Biology Mock Examination
	T3	Develop confident knowledge & understanding in Ecology, linking to the wider context of global ecology. Graphical interpretation of data giving reasoned judgements.	Ecology and Cumulative Knowledge Test
	T4	Review knowledge of Bioenergetics; photosynthesis and respiration. Modelling building the bigger picture, showing linking of concepts from across the course. Concreting of learned understanding. Planning of possible extended response titles. Practice maths skills, with a focus on application of examination style questions. Practice apparatus and techniques application.	Ecology and Cumulative Knowledge Test
	T5	Focus on application of learned understanding; focus on topic Inheritance, Evolution and Genetics. Modelling building the bigger picture, showing linking of concepts from across the course. Concreting of learned understanding. Planning of possible extended response titles. Practice maths skills, with a focus on application of examination style questions. Practice apparatus and techniques application.	External Examinations

B. WIDER KEY STAGE FOUR BIOLOGY CURRICULUM

- Careers Week in Term 6, with a focus in Biology on STEM Careers in Biology

TRILOGY CHEMISTRY CURRICULUM MAP

A. FORMAL KEY STAGE FOUR Trilogy Chemistry GCSE LEVEL CURRICULUM

Core Threads	By the end of key stage FOUR we want all students of Chemistry to ***know*** and ***do*** the following key things: Confident knowledge & understanding of key terms and concepts in Chemistry; application to scenarios; competent description; thorough practical skills; ability to analyse qualitative & quantitative data with reasoning; manipulation of data; coherent conclusions; well-reasoned judgements; evaluate practical procedure with growing independence, link key concepts.
Prior Knowledge	In KS4, students of Chemistry will build on the following **prior learning**: KS3 knowledge and understanding, ability to think scientifically, appreciation of key practical methods; awareness of variables; KS3 mathematical skills, awareness of the purpose of evaluation; justified conclusion; analysis of data with description of trends; key apparatus and techniques; appreciation of lab safety and safe use of chemicals.
Future Knowledge	The Curriculum in KS4 Chemistry will prepare students for the following **future learning**: Confident knowledge & GCSE understanding; application to wider scenarios, such as Chemistry in Industry and Chemistry of the Earth; depth of description; high competency for practical skills; analysis of qualitative & quantitative data with reasoning; manipulation of data; coherent conclusions; well-reasoned judgements; evaluate & refine practical procedure independently, link key concepts.

	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
Year 10	T1	Understanding & application of Carbon Chemistry. Links from Geography/KS3 source of oil, building upon knowledge to link to uses.	Carbon Chemistry Test
	T2	Understanding and application of Acids and their reactions including practical skills to make salts and comparing reactivity of metals. Understanding of the pH scale and the strengths of acids.	Carbon Chemistry Test
	T3	Completion of acids and their reactions. Understanding and application of quantitative chemistry. Mathematics skills: unit conversions; rearranging equations. Applying quantitative analysis to examination questions. Process Chemist.	Acids and their reactions and Cumulative knowledge Test
	T4	Completion of understanding and application of quantitative chemistry. Mathematics skills: unit conversions; rearranging equations. Applying quantitative analysis to examination questions. Laboratory Technician.	Exam Style consolidation questions
	T5	Consolidation of prior learning in preparation for end of year examination. Modelling application of understanding to unfamiliar questions. Review and feedback of understanding through end of year exam analysis. Mathematics Skills, with a focus on manipulating data and rearranging data.	End of Year 10 Internal Mock Examination
	T6	Understanding and application of chemical reactions and their rates. Practical skills, graph skills, data handling, maths skills. Linking subject to careers. Application of theory to practical. Testing hypothesis. Understanding of variables. Industrial Chemist.	Rates of Reaction and Cumulative knowledge Test
	Term	**KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISTED, AND LEARNT**	**Common Assessment End Points**
Year 11	T1	Understanding and application Energy & Equilibria. Importance in everyday life (Haber Process/Fuel Cells). Maths Skills in energy calculations. Linking concepts; compromise between rate and yield. Required Practical: recording temperature changes. Mathematics: graphs skills. Process Chemist.	Internal Mock Examination
	T2	Consolidation of prior learning in preparation for mock examination. Modelling application of understanding to unfamiliar questions. Review and feedback of understanding through mock exam analysis. Understanding and application of Electrolysis. Links to use in everyday life, such as extracting metals from their ores. Required practical: Electrolysis. Process Development Chemist.	Internal Mock Examination
	T3	Consolidation on the Electrolysis topic. Understanding and application of the chemical tests. Recall of prior learning (Chemical Formulae and Ions).	Energy, Equilibrium, Electrolysis, Analysis and Cumulative Knowledge Test
	T4	Consolidation of prior learning and application to exam questions in preparation for external exams through use of past paper questions. Targeted revision on topics in preparation for external examinations.	External Examinations
	T5	Consolidation of prior learning and application to exam questions in preparation for external exams through use of past paper questions. Targeted revision on topics in preparation for external examinations.	External Examinations

B. WIDER KEY STAGE FOUR Chemistry CURRICULUM

- Careers Week in Term 6, with a focus in Biology on STEM Careers in Chemistry

TRILOGY PHYSICS CURRICULUM MAP

A. FORMAL KEY STAGE FOUR Trilogy Physics GCSE LEVEL CURRICULUM

Core Threads	By the end of key stage FOUR we want all students of Physics to ***know*** and ***do*** the following things: Knowledge, apply & understand ideas in Physics, such in Waves, Forces, Energy and Electromagnets; evaluate and refine practical procedure, demonstrate high-level practical competencies in Required Practical's for Physics; interpret & analyse qualitative & quantitative data; draw coherent conclusions; offer well-reasoned judgements.
Prior Knowledge	In KS4, students of Physics will build on the following **prior learning**: Build on Key Stage Three understanding of key 'Big Ideas' in Physics, such as in Waves, Forces, Energy and Electromagnets; existing skills of analysis and evaluation; simple evaluations of practical procedures; knowledge of key equipment; consideration of variables, such as required for practical investigations.
Future Knowledge	The Curriculum in KS4 Physics will prepare students for the following **future learning**: Utilise knowledge in order to offer well-reasoned explanations; independently refine and evaluate practical procedure; high-level data analysis skills.

	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
Year 10	T1	Electricity Basics: Current (AC/DC) electricity, circuits (series and parallel) and their components, application of Ohms law, Power and Work Done. Required Practical: Resistance, IV Characteristics. Maths skills e.g., manipulating formulae and graphs.	Year 10 Physics Assessment Termly Test - 1
	T2	Electricity Application: Domestic electricity & National Grid, safety. National Grid Network Planner. Waves 1: Key Concepts. Properties of waves (transverse/longitudinal). Maths skills: wave equation	Year 10 Physics Assessment Termly Test - 1
	T3	Waves 1: Key Concepts. continued: Properties of waves (transverse/longitudinal), Required Practical: Wave properties Introduction to electromagnetic EM radiation. Oceanographer. Civil Engineering.	Year 10 Physics Assessment Termly Test - 2
	T4	Forces 1: Key Concepts. Balanced and Unbalanced, Contact and Non-Contact Forces. Free body diagrams; scalars & vectors; Maths skills: manipulating formulae, Pythagorean triangles (resolving forces), Newton's Laws of Motion. Structural Engineering.	Year 10 Physics Assessment Termly Test - 2
	T5	Forces 1: Key Concepts. Required Practical: Acceleration. Application of forces: Speed, velocity, and acceleration. Synthesising and recalling key knowledge and concepts in Physics thus far.	End of Year exam
	T6	Forces 1: Distance-time and velocity-time graphs, Momentum, Thinking, braking, and stopping distances. Road Safety Analyst Maths skills: Forces equations and calculations.	Year 10 Physics Assessment Test 3
Year 11	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Waves 2: Application. Reflection, refraction, absorption, and transmission of light waves. Properties uses & applications of EM radiation, ionising radiation. Thermal radiation required practical. Nuclear Physicist.	Year 11 Physics Assessment Termly Test - 1
	T2	Revision and consolidation for mock examinations. Forces 2: Application. Elastic forces (required practical), Centre of Mass. Design Engineer.	Year 11 Internal Mock Examination
	T3	Magnetism and Electromagnetism. Magnets and electromagnets, motor effect and applications of motors. Communications.	
	T4	Working Scientifically: scientific method over time, use of models, power & limitations of science. Research Physicist.	Year 11 Physics Assessment Termly Test - 2
	T5	Developing revision techniques, practising application skills and exam technique. Revision and consolidation. Managing & making links between knowledge & concepts. Preparing for the challenge of public examinations.	External Examinations

B. WIDER KEY STAGE FOUR PHYSICS CURRICULUM

- Cross-curricular links with Chemistry, Biology, Geography, Drama and Mathematics
- Links to careers in areas such as Medicine, Technology, Engineering, Education, Sports, Music, Space Industries, Military – in lessons and via suggested wider reading activities
- Links to cross-curricular Science Technology Engineering and Mathematics (STEM) activities and projects in school