Key Stage 4 Geology Eduqas 603/0598/8 - Key Ideas		
INTENT	**IMPLEMENTATION**	**IMPACT**
Key Idea 1: Rock exposures contain evidence of how rocks were formed and subsequently deformed.	This key idea enables students to analyse and interpret rock exposures from primary and secondary evidence. Key Idea 1 has been divided into five topics: 2 – Magic of Minerals 3 – Dynamic Deposition 4 – Magma on the move 5 – Squashed and Heated 8 – Under Stress	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.
Key Idea 2: Major concepts and techniques underpin our current understanding of the Earth and its history.	This key idea enables students to demonstrate an understanding of the “big ideas” in geology. Key Idea 2 has been divided into five topics: · 1 – Things Geological 7 – The Geological Machine 6 – Magic in the Rocks 13 – Good timing 12 – Hot and Cold 14 – A Journey through Time	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.
Key Idea 3: Comparisons of the Earth with other planetary bodies within the Solar System provide evidence for the origin and evolution of both.	This key idea enables students to appreciate the links between natural processes on Earth and those on other planetary bodies within the Solar System. 11 – A Jewel in Space	End of theme exam and practical exercises alongside Dig Deeper tasks.
Key Idea 4: Human interaction with the Earth can increase or reduce risk.	This key idea enables students to appreciate the cause and effect of human interactions with the natural environment. Key Idea 4 has been divided into two topics: 9 - A Dangerous Place to Live 10 - A World of Resources	End of theme exam and practical exercises alongside Dig Deeper tasks.
Key Idea 5: Different aspects of geology can be used to solve complex problems.	This key idea empowers students to use a combination of previously learned tools to solve complex pure or applied problems. 15 – The Geologists’ Puzzle Box	End of theme exam and practical exercises alongside Dig Deeper tasks.

Key Stage 4 Geology Eduqas 603/0598/8 - Curriculum Map

The Geology Department provides students with the foundations for understanding the science of 'how the Earth works': its structure, evolution and dynamics, and its mineral and energy resources through the application of chemistry, physics, biology and mathematics. Problem-solving is at the heart of Earth Science, and learners are encouraged to respond to geology in both familiar and novel situations in the field and the laboratory using of our extensive collection of rocks, minerals, thin sections, maps and fossils as well as specialist scientific equipment including lenses, polarising microscopes and clinometers.

In addition, learners will appreciate that the understanding and application of Earth Science is vital to the future quality of life and prosperity of the world's population; from supplying the ever-growing demand for mineral, energy, and water resources to mitigation of natural hazards by improved engineering and prediction techniques. In Component 1, the specification is assessed in a theoretical way. This is a paper-based written examination of 1 hour 30 minutes. It is worth 80 marks, 50% of the qualification. In Component 2 there is a more practical approach, with the assessment structured to investigate the geology of an area shown on an accompanying simplified geological map. This is an on-screen examination of 1 hour 15 minutes. It is worth 80 marks, 50% of the qualification.

Timing	INTENT	IMPLEMENTATION	IMPACT
Year 10 Autumn Term 1	1 – Things Geological	• A general introduction to geology including the basics of rocks, minerals and fossils. • Interpret rock cycle diagrams. • Distinguish between processes reflected in the rock record that occurred at different rates.	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.
Year 10 AutumnTerm 2	2 – Magic of Minerals	• Minerals are formed by: • crystallisation from a melt [quartz, feldspar, mica, olivine and augite] • metamorphic recrystallisation [calcite, garnet] • crystallisation from solution in evaporating water [halite] • crystallisation as cement from flowing pore waters [quartz, calcite] • crystallisation from hydrothermal fluids [in veins and faults: gangue minerals – quartz, calcite; ore minerals – haematite, galena]. • Modern laboratory techniques can be used to image mineral samples on a small scale and determine their chemistry e.g. the scanning electron microscope and electron microprobe. • Use appropriate tests for physical properties of minerals [observation of colour, hardness, streak, cleavage, lustre] [reaction with 0.5 mol dm−3 hydrochloric acid] to identify and distinguish between the minerals on the data sheet. • Interpret data from a data sheet.	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.
	3 – Dynamic Deposition	• Distinguish between the processes of weathering and erosion and evaluate their significance in the sedimentary characteristics and the geological history of sedimentary rock. • Interpret both the distance of transport from the shape and sorting of sediment and the energy level of the environment of deposition from sediment grain size.	End of theme exam and practical exercises alongside Dig Deeper tasks.

		• Distinguish permeable from impermeable rocks by observing the effects of dropping water on specimens and/or by immersing them in water. • Identify the named sedimentary rocks in hand specimens, rock exposures and diagrams/photographs from observation of their colour, texture, reaction with 0.5 mol dm−3 hydrochloric acid, mineralogy and other diagnostic features. • Construct and apply a classification system/key to identify the named sedimentary rocks. • Use the characteristics of sedimentary rocks, including their distinctive sedimentary textures, structures, mineralogy and their fossil content, as seen in hand specimens, rock exposures, diagrams and photographs to interpret their environments of deposition. • Analyse sedimentary rock formations on simple geological maps, cross-sections and graphic logs to interpret geological structure and the history of sedimentation. • Construct a simple graphic log from bed thickness and grain size data. • Identify fossil groups on the basis of their morphology [trilobite, ammonite, coral, plants, trace fossils – burrows, footprints], as seen in hand specimens, diagrams/photographs.	Application in the field.
Year 10 Spring Term 1	4 – Magma on the move	• Identify the named igneous rocks in hand specimens/rock exposures, diagrams and photomicrographs from observation of their colour, crystal size, random crystal orientation of phenocrysts/groundmass and mineralogy. • Recognise and interpret the differing shapes of volcanoes from diagrams/photographs. • Investigate factors affecting the length of lava flows using the 'Jelly lava flow' simulation. • Identify the characteristics of igneous bodies as seen in hand specimen/rock exposures, diagrams and photographs. • Analyse simplified geological maps and cross-sections to interpret their contrasting modes of formation.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 10 Spring Term 2	5 – Squashed and Heated	• Identify the named metamorphic rocks in hand specimens from observation of their crystal size, crystal orientation and reaction with 0.5 mol dm−3 hydrochloric acid. • Identify the characteristic features of a metamorphic aureole on diagrams and simplified geological maps and cross-sections. • Use the characteristics of metamorphic rocks as seen in hand specimens/rock exposures, diagrams and photographs, simplified geological maps and cross-sections to interpret their contrasting modes of formation.	End of theme exam and practical exercises alongside Dig Deeper tasks.
	8 – Under Stress	• The rock record provides evidence of tectonic activity. escribe safety precautions to be taken when visiting field exposures. Measure strike and dip. Analyse strike and dip measurements to describe and interpret rock structures in 3D. • Interpret characteristic features of folding in field exposures, diagrams, photographs, simplified geological maps and cross-sections: horizontal beds; dipping beds; folded beds. • Interpret features of rock deformation by faulting in field exposures, diagrams, photographs, simplified geological maps and cross sections: normal fault; reverse/thrust fault; strike-slip fault; fault displacement.	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.

		• Identify unconformities in the field, in diagrams, photographs, geological maps and cross-sections. Use unconformities in interpreting the geological history of exposures.	
Year 10 Summer Term 1	7 – The Geological Machine	• The Earth has a concentric structure based on its chemical properties and mechanical behaviour. • The mechanical behaviour of the outer Earth involves the lithosphere. It is underlain by the asthenosphere. • The lithosphere is divided into a number of rigid 'tectonic plates' which move relative to one another by mechanisms not yet completely understood. • Analyse the evidence for plate tectonics. • Use maps to interpret the global distributions of present-day earthquakes, volcanic activity and mountain belts in the context of processes at or near to plate boundaries. • Interpret the relative movement of plates from their plate boundary context shown in maps and diagrams. Interpret the type of plate boundaries from data provided in text, diagrams/photographs and maps. • Plate theory is being continually re-evaluated in the light of new evidence.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 10 Summer Term 2	9 - A Dangerous Place to Live	• Investigate and interpret geological data relating to the distribution, measurement and possible causes of earthquakes, volcanic eruptions, landslides and associated tsunamis. • Use examples to contrast the risk of naturally occurring hazards in areas of contrasting development. • Methods of reducing risk include: building design and regulation; prediction; warning schemes and evacuation.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 11 Autumn Term 1	6 – Magic in the Rocks	• Life probably originated from the oceans or hydrothermal pools 3500 Ma. Use simple evolutionary tree diagrams to demonstrate evolutionary trends. Interpret data from the data sheet. • Evaluate the significance of the incomplete nature of the fossil record.	End of theme exam and practical exercises alongside Dig Deeper tasks.
	13 – Good timing	• Investigate the link between ancient and modern processes by applying the principle of uniformitarianism. • Apply the principles of relative dating to interpret the evidence in rock exposures in the field, in diagrams/photographs and simplified maps and cross-sections for the sequence of geological events that formed/deformed them. • Use the named fossils, as seen in specimens and diagrams/photographs to interpret the geological history of a rock sequence. • Carry out a simple analysis of the age of a radioactive mineral based on the half-life concept. • The development of the concept of Deep Time has extended the age of the Earth to around 4.6 billion years.	End of theme exam and practical exercises alongside Dig Deeper tasks. Application in the field.
Year 11 AutumnTerm 2	10 - A World of Resources	• There is a distinction between Earth's: resources and reserves of a resource. • Investigate the uses of Limestone for aggregate in construction; Haematite in the steel industry; Uranium in energy generation.	End of theme exam and practical exercises alongside Dig Deeper tasks.

		• Interpret prospecting data [geological mapping, geophysical, geochemical] to identify possible valuable mineral resources. • Interpret data from maps, cross-sections and seismic surveys to identify possible gas/oilfields. • Analyse different rock types for their suitability as an aquifer. • Use data from descriptions, diagrams/photographs, maps and cross-sections to: investigate the suitability of a potential landfill site for the disposal of domestic waste; investigate the suitability of a potential site for the long term storage of hazardous waste. • Use data from descriptions, diagrams/photographs, maps and cross-sections to investigate the geological factors affecting the siting of major engineering projects.	
	12 – Hot and Cold	• Evaluate the relative roles of volcanic emissions and fossil fuels in current rates of climate change. • Investigate the evidence from the internet, maps and aerial images for past and current fluctuations in continental ice and the effect on global sea levels.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 11 Spring Term 1	11 – A Jewel in Space	• There are similarities and differences between the Earth and its planetary neighbours [rocks, landscapes, atmosphere, temperature, pressure and gravity]. • Use the principle of uniformitarianism to interpret the geological processes operating on planetary bodies within the Solar System. • Use evidence from space imagery and other planetary exploration data [maps, diagrams/photographs] to interpret the landforms and processes operating on planetary bodies within the Solar System e.g. Moon and Mars. • Impacts from meteorites/comets may have had a significant effect on the evolution of the Earth and its biosphere.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 11 Spring Term 2	14 – A Journey through Time	• There is evidence for global climate change through geological time. Deposition of glacial deposits in regions close to the equator, deposition of limestone in areas outside the Tropics. There is evidence for changes in sea level. • Interpret the evidence from hand specimens of rocks and fossils, maps, diagrams/photographs for the changes in latitude of the British area from the Lower Palaeozoic to the Cenozoic. • Interpret data from a data sheet.	End of theme exam and practical exercises alongside Dig Deeper tasks.
Year 11 Summer Term 1	15 – The Geologists' Puzzle Box	• Apply learning from different parts of the course analytically to solve complex geological problems.	This theme is not examined.