Department: Geology

Our Curriculum Aims:

- To introduce the structure, composition, and processes of the Earth from centre to surface.
- To give an understanding of how these processes and their interactions shape the Earth's surface, climate, and biosphere.
- To understand and evaluate the link between cause and effect for different geological processes.
- To acknowledge and evaluate the role of humans in, and our dependency and impact on, the Earth system.
- To equip students with valuable transferable skills including the abilities to:
    - apply observational, practical, modelling, enquiry, and problem-solving skills, both in the laboratory and field, including those required in understanding 3D data.
    - apply the scientific method to evaluate and critically analyse experimental methodology, evidence, and conclusions, both qualitatively and quantitatively.
    - apply biological, chemical, and physical concepts in novel geological situations often employing partial data sets and resolving conflicting evidence
    - apply mathematical concepts in the interpretation of numerical and graphical geological data.
    - summarize and communicate individually and in groups, geological conclusions both in writing and in verbal presentations.

Why Choose GCSE

Geology is the study of the Earth, its processes, its materials, its history, and its effect on humans and life in general. Rocks, minerals, fossils, mountains, earthquakes, volcanoes, rivers, glaciers, landslides, climate change and many other subjects fall into this broad field of Science.

Geologists perform a wide range of important services for our modern society. They:

- determine the stability of building sites in civil engineering projects.
- find supplies of clean water.
- search and exploit valuable natural resources such as iron, coal, and oil.
- minimise the threat to communities at risk from Geologic hazards, such as earthquakes.
- are intrinsically involved in environmental projects to protect the Earth.

Geologists are highly sought after given their rarity, multidisciplinary knowledge, and wide range of transferable skills. Hence, Geologists can be found in a variety of unexpected careers such as Law, Journalism, Finance and Engineering. That the country needs Geologists is evidenced by the fact the UK government has described Geology as a 'Shortage Occupation'. Their report details 10 Geoscience-related shortage jobs a similar number to Engineering, Computing and Medicine. A recent study by the Sunday Times Good University Guide has shown that Geology graduates at Imperial College were the top earners in a league of graduate salaries, exceeding those of medics and engineers for example.

Is Geology for you? Geology appeals to many different types of student. However, the norm is for students is to have a liking of Science – Geology is of course a multidisciplinary Science using Biology, Chemistry and Physics to explain Geological processes. Geology students usually are interested in physical geography (coastlines, glaciations, plate tectonics etc.) and have a liking for the outdoors. Fieldwork forms a compulsory part of the course, and a trip to the Peak District is run at the start of Year 11.

Geology students consistently obtain some of the best results in the school. The importance of a student's GCSE results cannot be overemphasised given that universities will no longer have AS results to guide them to make offers for university places. Additionally, the retention from GCSE to A level is excellent - once students find out what Geology is, they become hooked!

Geology is special in that it is a highly field-oriented Science. Geologist's quite frequently work outdoors, often in out-of-the way places such as deserts or sparsely populated mountain ranges. Some of the most geologically interesting places in the world are also the most scenic. Students of Geology can expect to find themselves working in areas that they have often wanted to travel to. Once you have an introduction to Geology, you will see the world around you in a completely different light.

'We know from science and geology that the world is not static, that it's always changing. If you know anything about geology, and anything about palaeontology, you recognise that we are living in extraordinary times. We need to be aware of that and aware of the responsibility we have. And that's why geology is so important'.

Sir David Attenborough.
Narrator on numerous BBC series.
MA Natural Sciences, Cambridge.
Geology and Zoology.

In conclusion Geology will appeal to students who have an interest in both Science and Physical Geography.

Key Stage Four Curriculum Overview

YEAR	HALF TERM	NAME OF TOPIC	KEY TOPIC CONTENT	SUMMATIVE ASSESSMENT
10	HT1	1.1. Minerals	The various processes by which minerals form and the tests employed to identify minerals including modern laboratory methods.	Three past qustions and end of topic test
	HT2 & HT3	1.2 Igneous Rocks & Processes	Classification, identification and formation of the main igneous rock types. Types and styles of volcanicity.	Four past qustions and end of topic test
	HT3 & HT4	1.3 Sedimentary Rocks & their Fossil Content	Classification, identification and formation of the main sedimentary rock types.	Four past qustions and end of topic test
	HT5	1.4 Metamorphic Rocks- Processes	Classification, identification and formation of the main metamorphic rock types.	One past qustions and end of topic test
	HT5	1.5 The Rock Cycle	The rock cycle and link to plate tectonic processes. Catastrophic and gradulaistic geological processes.	One past question. TRIAL EXAM.
	HT6	2.1 Rock Deformational Structures	The description and interpretation of tectonic structures (folds, faults, unconformities) as formed by differing stress regimes.	Two past qustions and end of topic test
	HT6	2.2 Geochronological Principles	The vital stratigraphic principles that underline geology. Relative and absolute dating principles. The concept of deep time.	One past question
11	HT1	3.1 Plate Tectonics	Internal structure of the Earth. Lithosphere and asthenosphere. Development of the plate tectonic theory. Evidence for plate tectonics.	Three past qustions and end of topic test
	HT2	3.2 Earth Hazards & their Mitigation	The geological causes of Earth hazards. The factors determining the level of risk of a hazard, reducing risk and the problems of predicting hazardous events.	Three past qustions
	HT2	4.1 Planetary Geology	The different types of meteorite and what they tell us. Similarities and differences between the structure and composition of the planetary bodies of the Solar System.	One past question
	HT3 & HT4	4.2 The Origin and Development of Life on Earth	The origin and evolution of life on Earth. Mass extinctions and their possible causes. Exceptional preservation.	Three past qustions and end of topic test
	HT4	4.3 Global Climate and Sea Level Change	The causes of global climate change through geological time and the effects on sea level. Positive and negative feedback in the carbon cycle. Carbon sequestration.	One past question
	HT5	5. Earth Resources and Engineering	The prospecting techniques employed for detecting Earth resources- coal, oil, water, gas, ore minerals. Geological factors influencing major engineering projects.	Three past questions
	HT5	6. Revision		Past paper questions and specially designed Topic revision booklet

Assessment.

Pupils will sit two examinations at the end of Year 11, each worth 50%. There is no coursework. Details on the specification being followed can be accessed via the link:

https://www.eduqas.co.uk/qualifications/geology-gcse/#tab_overview

Recommended Revision Guides for GCSE

Geology students have access to various revision materials which are produced in-house and available through the Geology O365 directory.

Support available for GCSE Students

Support materials are available on the Geology O365 directory. Support is also available to students through pre-bookable, lunchtime, 10-minute-long, one-to-one meetings with Dr Stephen. Alternatively, sessions with sixth form Geology prefects are also available.

Dr K Stephen, February 2021.