

English National Curriculum – Earth Science comparisons 2013

Key stage	Content of the current curriculum (published 2007)	Earth science curriculum document submitted to the Department for Education in 2012*	Draft curriculum published in January 2013
Key stage 1: 5 – 7 year olds	Science	Science	Science
	<ul style="list-style-type: none"> • Sc3 1c. recognise and name common types of material [for example, metal, plastic, wood, paper, rock] and recognise that some of them are found naturally 	<ul style="list-style-type: none"> • Fieldwork: observation and description of what is around you • Rocks: sorting and grouping rocks based on appearance 	<p>Y1: Everyday materials</p> <ul style="list-style-type: none"> ▪ identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock <p>Y1: Seasonal changes</p> <ul style="list-style-type: none"> ▪ observe the apparent movement of the Sun during the day ▪ observe changes across the four seasons ▪ observe and describe weather associated with the seasons and how day length varies. <p>Y2: Uses of everyday materials</p> <ul style="list-style-type: none"> ▪ identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard.
	Geography**	Geography	Geography**
	<ul style="list-style-type: none"> • 2b. use fieldwork skills [for example, recording information on a school plan or local area map] • 3a. identify and describe what places are like [for example, in terms of landscape, jobs, weather] 	<ul style="list-style-type: none"> • Landscapes and environments: indentifying key landforms, soil, vegetation, water (rivers and coasts) and weather • Fieldwork: observation and description of what is around you 	<ul style="list-style-type: none"> • [refer to] key physical features, including: beach, coast, forest, hill, mountain, ocean, river, soil, valley, vegetation, and weather • use aerial photographs and plan perspectives to recognise landmarks and basic physical features; devise a simple map; and use and construct basic symbols in a key • use simple fieldwork and observational skills to study the geography of their school and the key human and physical features of its surrounding environment.

Key stage 2: 7 – 11 year olds	Science	Science	Science
	<ul style="list-style-type: none"> Sc3 1d. to describe and group rocks and soils on the basis of their characteristics, including appearance, texture and permeability 	<ul style="list-style-type: none"> Fieldwork: observe and record local fossils and rock types Fossils as a record of extinct species and of evolution Formation and identification of sedimentary, metamorphic and igneous rocks, their resultant properties Solar system – Sun, Moon and Earth and their effects – light, heat, seasons, night and day 	<p>Y3: Rocks</p> <ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their simple physical properties relate the simple physical properties of some rocks to their formation (igneous or sedimentary) describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. <p>Y4: Evolution and inheritance</p> <ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago <p>Y5: Earth and space -</p> <ul style="list-style-type: none"> describe the movement of the Earth relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night.
	Geography**	Geography	Geography** -
	<ul style="list-style-type: none"> 6c. water and its effects on landscapes and people, including the physical features of rivers [for example, flood plain] or coasts [for example, beach], and the processes of erosion and deposition that affect them 7c. carry out fieldwork investigations outside the classroom. 	<ul style="list-style-type: none"> The world's main physical features – locations, patterns, characteristics and scale: continents, oceans, currents, mountain chains, river basins, coasts, and hot and cold deserts World climate zones, environments and vegetation belts The UK: climate and weather patterns; types of landscapes Fieldwork: observe and record local landscapes and weather 	<ul style="list-style-type: none"> identify the position and significance of ... and time zones (including day and night) describe and understand key aspects of: <ul style="list-style-type: none"> physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle human geography, including: settlements, land use, economic activity use fieldwork to observe, measure and record the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.

Key stage 3: 11-14 year olds	<p style="text-align: center;">Science</p> <ul style="list-style-type: none"> • 3.4 The environment, Earth and universe <ul style="list-style-type: none"> a. geological activity is caused by chemical and physical processes b. astronomy and space science provide insight into the nature and observed motions of the sun, moon, stars, planets and other celestial bodies c. human activity and natural processes can lead to changes in the environment. 	<p style="text-align: center;">Science</p> <ul style="list-style-type: none"> • Lab/fieldwork: observe, record and experiment to test hypotheses about past processes and environments • Life has evolved over billions of years – observing fossils and the properties of rocks in the geological record informs our understanding of past environments and the development of life and the planet • The rock cycle – formation and cycling of igneous, metamorphic and sedimentary rock by Earth processes • Earth structure – core, mantle and crust • The age of rocks at the earth’s surface can be estimated by their pattern of distribution and radiometric dating • Formation of solar system and the Earth; evolution of atmosphere, oceans and solid Earth • Climate has varied through Earth history and continues to do so 	<p style="text-align: center;">Science</p> <p>Chemistry</p> <p>Earth science</p> <ul style="list-style-type: none"> ▪ the composition of the Earth and the atmosphere ▪ changes to the Earth’s atmosphere since its formation ▪ the production of carbon dioxide by human activity and the impact on climate ▪ the efficacy of recycling.
	<p style="text-align: center;">Geography**</p> <ul style="list-style-type: none"> • 1.5. Physical and human processes <ul style="list-style-type: none"> ▪ Understanding how sequences of events and activities in the physical and human worlds lead to change in places, landscapes and societies. • 1.6. Environmental interaction and sustainable development <ul style="list-style-type: none"> ▪ a Understanding that the physical and human dimensions of the environment are interrelated and together influence environmental change. ▪ b Exploring sustainable development and its impact on environmental interaction and climate change. • 2.2. Fieldwork and out-of-class learning <ul style="list-style-type: none"> ▪ select and use fieldwork tools and techniques appropriately, safely and efficiently. • The study of geography should include: • f physical geography, physical processes and natural landscapes 	<p style="text-align: center;">Geography</p> <ul style="list-style-type: none"> • The processes shaping the Earth’s surface including the water cycle; weathering and erosion and the formation of soils • Landscapes as distinctive collections of landforms, soils and Earth’s surface processes; focus on rivers and coasts • Weather systems, climate zones and ocean currents; their properties, processes and patterns • People-environment interactions • Renewable and non-renewable resources form the Earth and its atmosphere • Human activity affects climates, oceans and landscapes • Humans are affected by natural hazards: distributions and patterns (volcanoes, earthquakes, flooding, landslides, hurricanes, etc.) • Fieldwork: observe, map measure, analyse and interpret UK landscapes/surface processes, eg. rivers, weather 	<p style="text-align: center;">Geography**</p> <ul style="list-style-type: none"> ▪ understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in: ▪ physical geography relating to: glaciation, plate tectonics, rocks, soils, weathering, geological timescales, weather and climate, rivers and coasts • understand how human and physical processes interact to have an impact on and form distinctive landscapes • use fieldwork to collect, analyse and draw conclusions from geographical data, using multiple sources of increasingly complex information.

Key stage 4: 14-16 year olds	<p align="center">Science</p> <ul style="list-style-type: none"> • Environment, Earth and universe <ol style="list-style-type: none"> a. the effects of human activity on the environment can be assessed using living and non-living indicators b. the surface and the atmosphere of the Earth have changed since the Earth's origin and are changing at present c. the solar system is part of the universe, which has changed since its origin and continues to show long-term changes. 	<p align="center">Science</p> <ul style="list-style-type: none"> • Observations of the present and evidence about past processes and environments can be used to model future change • Life has evolved over billions of years and continuously modifies Earth systems • Earth and its atmosphere consist of dynamic and complex interacting systems of rock, water, ice, air and life; feedbacks operate and energy and mass are recycled • Greenhouse effect – composition of the atmosphere controls the balance of incoming and outgoing energy, and hence the temperature and climatic conditions for life • The carbon cycle – fossil fuels, limestone, etc. act as sinks which lock away atmospheric carbon, which is rapidly released when fuels are burnt • Global distribution of mineral resources depends upon past geological processes • Plate tectonics as a unifying theory caused by mantle convection • Plate tectonics has shaped the continents, ocean circulation and climate, and the development of landforms and active geological processes at plate margins 	<p align="center">Science</p> <p>Biology</p> <p>Evolution, inheritance and variation</p> <ul style="list-style-type: none"> ▪ the evidence for evolution from geology, fossils, comparative anatomy and molecular biology <p>Chemistry</p> <p>Earth science</p> <ul style="list-style-type: none"> ▪ carbon dioxide and methane as greenhouse gases ▪ carbon capture and storage ▪ common pollutants and their sources: carbon monoxide, sulphur dioxide, oxides of nitrogen, ozone and particulates ▪ the Earth's water resources and obtaining potable water ▪ calcium carbonate as a raw material for the construction industry <p>Physics</p> <p>Waves</p> <p>Sound in matter</p> <ul style="list-style-type: none"> ▪ the range of frequencies of sound, below and above the audible; sound travelling at different speeds through different substances; sound waves in rocks and water, and reflections detecting subterranean structures; earthquake detection
	<p align="center">Geography</p> <p>No KS4 curriculum for Geography was published</p>	<p align="center">Geography</p> <ul style="list-style-type: none"> • Fragile landscapes and environments – deserts, polar regions, mountains and reefs – Earth surface processes and human interactions • Human life has rapidly modified Earth's system and surface resulting in climate changes, ocean pollution, land degradation and flood risk • Ecosystems as the balance and interactions between climate, soil, water, plants and animals • Sustainability and use of renewable and non-renewable resources 	<p align="center">Geography</p> <p>No KS4 curriculum for Geography is planned</p>

* Document submitted to the Department for Education in the summer of 2012 on behalf of the Earth science education community by Nic Bilham of the Geological Society and Steve Brace of the Royal Geographical Society.

** The full physical geography components of the geography curriculum have not been included – only those aspects considered to impinge directly on the Earth science content.