Geography Department – Year 10 The Competent Geographer

Shirley High Curriculum Map

Students begin their GCSE (AQA 8035) and study the whole of Paper 1, Living with the physical environment: natural hazards, the living world and physical landscapes in the UK. Building on their Key Stage 3 knowledge and skills, they learn named case studies in depth, from the Nepal earthquake to the Holderness coast, and develop the map, graph and extended writing skills they will use across all three GCSE papers. Coasts leads directly into their Year 11 fieldwork at Seaford. NB: units don't fall neatly into half terms so there is some crossover.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Theme/Topic/Skill:	**Theme/Topic/Skill:**	**Theme/Topic/Skill:**	**Theme/Topic/Skill:**	**Theme/Topic/Skill:**	**Theme/Topic/Skill:**
	The challenge of natural hazards	The challenge of natural hazards (continued): weather hazards in the UK and climate change The living world	The living world (continued): tropical rainforests PPE 1 (February)	The living world (continued): hot deserts	Physical landscapes in the UK: river landscapes	Physical landscapes in the UK: coastal landscapes PPE 2 (June)
Why Now?	A sound first GCSE unit: the topics are complex but familiar, so students gain confidence early in their GCSE journey. It builds directly on Y9 Earthquakes & Volcanoes (plate tectonics, Wegener and Hess, the Nepal 2015 earthquake and hot spots such as Hawaii), Y7 Weather & Climate and Y8 Asia (the 2017 South Asia floods). Comparing Nepal with Italy introduces a key GCSE idea early: the same hazard has very different effects and responses in places of different wealth.	UK weather hazards and climate change build on Y7 Weather & Climate and Y9 Climate Change (the Paris Agreement, the Maldives, mitigation and adaptation), moving from what students can see in the UK – storms, floods and heatwaves – to the global evidence for and causes of change. The living world then begins with an ecosystem close to home, Epping Forest, before moving to the world's biomes, using the global atmospheric circulation just taught to explain where they are.	Builds on Y8 Brazil and Y8 Ecosystems with far more detailed knowledge of rainforest structure, interdependence and adaptation. The Amazon case study takes students from the causes and changing rates of deforestation to its impacts and the value of rainforests, before they judge how rainforests can be managed sustainably. Students start to hone evaluative skills through 9-mark questions. PPE 1 (pre-public examination) in February checks the hazards and living world content taught so far and shows each student where to focus.	Completes the living world with the department's hot deserts option. It builds on Y8 Africa (the Sahel, desertification and the Great Green Wall) and on the climate graph skills from the rainforest unit. The Thar Desert is used to weigh up the opportunities and challenges of development in an extreme environment, and the Sahel shows how human and physical causes combine in desertification and how appropriate technology can reduce the risk.	Begins physical landscapes with the UK's relief and rivers, building on Y9 Rivers (drainage basins, the York 2015 floods and flood management). Students move from processes to landforms to people, so they understand why rivers flood and how flooding can be managed. Ordnance Survey (OS) map skills are applied to a real river valley, the River Tees, and hydrograph work develops the data skills needed for Paper 3.	Completes Paper 1 with coasts, building on Y9 Coasts (Holderness, Mappleton and Spurn Point). Students explain how geology, waves and coastal processes create the landforms of the Dorset coast, then judge how the coast should be managed. Coasts leads directly into the Year 11 physical fieldwork at Seaford, where students test the effectiveness of coastal management for themselves. PPE 2 in June identifies the gaps to close in Year 11.
Fundamental Concepts	**Key concepts:** Place · Scale · Physical and human processes · Environmental impact **Disciplinary knowledge:** Describing global distributions from maps; comparing the effects of and responses to hazards in places of contrasting wealth; judging how far risk can be reduced. **Substantive concepts:** • Natural hazards and the factors affecting hazard risk • Plate tectonics and plate margins • Effects of and responses to tectonic hazards • Living with and reducing tectonic risk • Global atmospheric circulation • Tropical storms: formation, effects and responses	**Key concepts:** Physical and human processes · Environmental impact · Scale · Interdependence **Disciplinary knowledge:** Evaluating the evidence for climate change and how reliable it is; weighing mitigation against adaptation; explaining how change to one part of an ecosystem affects the rest. **Substantive concepts:** • Weather hazards in the UK • A UK extreme weather event (Somerset Levels) • Evidence for climate change • Causes of climate change • Managing climate change: mitigation and adaptation • Ecosystems at a small and a global scale	**Key concepts:** Interdependence · Environmental impact · Sustainable development · Place **Disciplinary knowledge:** Explaining interdependence; interpreting climate graphs and deforestation data; evaluating strategies for sustainable management. **Substantive concepts:** • Tropical rainforest characteristics • Interdependence and biodiversity • Adaptations of plants and animals • Deforestation: causes, rates and impacts • The value of tropical rainforests • Sustainable management	**Key concepts:** Place · Interdependence · Environmental impact · Sustainable development **Disciplinary knowledge:** Using a case study to weigh opportunities against challenges; explaining the causes of desertification; evaluating strategies to reduce it. **Substantive concepts:** • Hot desert characteristics and adaptations (department option; cold environments are not studied) • Opportunities for development in hot deserts • Challenges of development in hot deserts • Causes of desertification • Reducing the risk of desertification	**Key concepts:** Physical and human processes · Place · Scale · Environmental impact **Disciplinary knowledge:** Reading OS maps (grid references, contours, distance); drawing and interpreting long profiles and hydrographs; assessing the costs and benefits of flood management. **Substantive concepts:** • UK upland and lowland landscapes • River profiles and fluvial processes • River landforms of erosion and deposition • Flood risk and hydrographs • Hard and soft flood management (department option: rivers)	**Key concepts:** Physical and human processes · Place · Environmental impact · Sustainable development **Disciplinary knowledge:** Identifying landforms on OS maps; explaining how geology shapes the coastline; evaluating coastal management and the conflicts it creates. **Substantive concepts:** • Waves and coastal processes • Weathering and mass movement • Coastal landforms of erosion • Coastal landforms of deposition • Coastal management and conflict (department option: coasts; glacial landscapes are not studied)
Students will…	**Learn about:** • What natural hazards are, the types of hazard and the factors that affect hazard risk (wealth, population growth, urbanisation, land use and climate change) • The structure of the Earth and the difference between oceanic and continental crust • Plate tectonics theory: convection, ridge push and slab pull • The global distribution of earthquakes and volcanoes, the Ring of Fire and hot spots such as Hawaii • Physical processes at constructive, destructive (including collision) and conservative plate margins • What causes an earthquake: focus, epicentre, seismic waves and the Richter scale • Primary and secondary effects and immediate and long-term responses: Gorkha, Nepal (2015, a low-income country, LIC) compared with Amatrice, Italy (2016, a high-income country, HIC) • Why people live in areas at risk, and how monitoring, prediction, protection and planning reduce the risk • Global atmospheric circulation: the Hadley, Ferrel and Polar cells, pressure belts, surface winds and the Intertropical Convergence Zone (ITCZ) • Where tropical storms form and the conditions they need, including the Coriolis effect	**Learn about:** • The difference between weather and climate, and the types of weather hazard that affect the UK • The evidence that UK weather is becoming more extreme • The Somerset Levels floods (2013–14): physical and human causes; social, economic and environmental impacts; immediate and long-term responses and management • The Quaternary period, glacials and interglacials • Evidence for climate change – ice cores, sediments, pollen, tree rings, glaciers, sea ice and historical records – and how reliable it is • Natural causes of climate change: orbital changes (Milankovitch cycles), solar output and volcanic eruptions • The natural and enhanced greenhouse effect, and human causes: fossil fuels, agriculture and deforestation • The effects of climate change on people and the environment • Managing climate change: mitigation (alternative energy, carbon capture, planting trees, international agreements) and adaptation (agriculture, water supply, rising sea levels) • Ecosystems: biotic and abiotic parts, producers, consumers and decomposers, food chains	**Learn about:** • The distribution of tropical rainforests and their climate • Rainforest soils, the nutrient cycle and why the soils are infertile • Interdependence: how climate, water, soils, plants, animals and people depend on each other • The layers of the rainforest and its biodiversity • How plants (buttress roots, drip tips, lianas, epiphytes) and animals (sloths, harpy eagles, jaguars) adapt • Changing rates of deforestation in the Amazon • The causes of deforestation: subsistence and commercial farming, logging, mining, energy, roads and settlement • The impacts of deforestation: economic development, soil erosion, loss of biodiversity, indigenous peoples and climate change • The value of rainforests to people and the environment, including medicines, at local, national and global scales • Sustainable management: selective logging and replanting, conservation and education, ecotourism, international agreements and debt-for-nature swaps	**Learn about:** • The distribution of hot deserts and their climate, including the diurnal temperature range • Hot desert soils, the nutrient cycle and interdependence • How plants and animals adapt to hot deserts, and issues of biodiversity • The Thar Desert: its location and people • Opportunities for development in the Thar: minerals, energy (solar and wind), farming and tourism • Challenges of development in the Thar: extreme temperatures, water supply and inaccessibility • Areas at risk of desertification, including the Sahel • The causes of desertification: climate change, population growth, fuel wood, over-cultivation, overgrazing and soil erosion • Reducing the risk of desertification: water and soil management (bunds), tree planting (the Great Green Wall) and appropriate technology (improved cooking stoves)	**Learn about:** • The UK's upland and lowland areas and main river systems • The drainage basin, and the long and cross profiles of a river • Fluvial processes: hydraulic action, abrasion, attrition and solution; traction, saltation and suspension; deposition • Landforms in the upper course: interlocking spurs, waterfalls and gorges • Landforms in the middle and lower course: meanders, ox-bow lakes, levées, flood plains and estuaries • The River Tees: landforms along its course, including High Force, and on an OS map • Physical and human factors affecting flood risk • Storm hydrographs: lag time, peak discharge and why hydrographs differ • Hard engineering (dams, straightening, embankments, relief channels) and soft engineering (flood warnings, planning, river restoration) • The Jubilee River: why it was needed, how it works and the issues it created	**Learn about:** • Wave types and their characteristics: fetch, swash, backwash, constructive and destructive waves • Weathering (mechanical and chemical) and mass movement (rock falls, sliding and slumping) • Coastal erosion (hydraulic power, abrasion, attrition), longshore drift and why deposition happens • How geology shapes the coast: discordant and concordant coastlines • Landforms of erosion: headlands and bays, cliffs and wave-cut platforms, caves, arches, stacks and stumps • Swanage Bay, Durlston Head and Old Harry Rocks on the Dorset coast, including on an OS map • Landforms of deposition: beaches, sand dunes, spits and bars • Hard engineering (sea walls, rock armour, gabions, groynes), soft engineering (beach nourishment, dune regeneration) and managed retreat • The costs and benefits of each approach • Holderness: why it erodes so quickly, the management scheme at Mappleton, its effects and the conflicts it creates

	• How tropical storms form, their structure (eye and eyewall), the Saffir–Simpson scale and how climate change may affect them • Typhoon Haiyan, Philippines (2013): effects and responses, and reducing the effects of tropical storms	and webs, and nutrient cycling • Epping Forest: a small-scale UK ecosystem and how change to one part affects the rest • The distribution and characteristics of the world's biomes, and why they are where they are				
Language for Life (Key terms / Vocabulary)	• Natural hazard, hazard risk, tectonic hazard, atmospheric hazard, oceanic crust, continental crust, convection current, plate margin, subduction, ridge push, slab pull, hot spot, focus, epicentre, seismic waves, Richter scale, primary and secondary effects, immediate and long-term responses, monitoring, prediction, protection, planning, insolation, Hadley, Ferrel and Polar cells, ITCZ, Coriolis effect, eye, eyewall, storm surge, Saffir–Simpson scale.	• Weather, climate, extreme weather, dredging, Quaternary, glacial, interglacial, proxy data, ice core, Milankovitch cycles, greenhouse effect, enhanced greenhouse effect, mitigation, adaptation, carbon capture and storage, ecosystem, biotic, abiotic, producer, consumer, decomposer, food chain, food web, nutrient cycle, biomass, litter, humus, biome.	• Tropical rainforest, equatorial climate, convectional rainfall, evapotranspiration, latosol, leaching, interdependence, biodiversity, emergent layer, canopy, buttress roots, drip tips, lianas, epiphytes, deforestation, subsistence farming, commercial farming, selective logging, clear felling, carbon sink, goods and services, sustainable development, ecotourism, debt-for-nature swap.	• Hot desert, diurnal range, xerophyte, ephemeral, adaptation, interdependence, biodiversity, irrigation, canal, renewable energy, inaccessibility, desertification, overgrazing, over-cultivation, fuel wood, soil erosion, bunds, tree planting, appropriate technology.	• Upland, lowland, drainage basin, watershed, source, confluence, mouth, long profile, cross profile, vertical and lateral erosion, hydraulic action, abrasion, attrition, solution, traction, saltation, suspension, interlocking spurs, waterfall, gorge, meander, ox-bow lake, levée, flood plain, estuary, discharge, lag time, peak discharge, hydrograph, hard and soft engineering, relief channel.	• Fetch, swash, backwash, constructive wave, destructive wave, freeze-thaw, mass movement, slumping, rock fall, hydraulic power, longshore drift, discordant coast, concordant coast, headland, bay, wave-cut notch, wave-cut platform, arch, stack, stump, beach, sand dune, spit, bar, groyne, rock armour, gabion, sea wall, beach nourishment, managed retreat.
Extended writing Opportunities	9-mark: 'Long-term responses to a tectonic hazard are more important than immediate responses' (Nepal and Italy). 9-mark: immediate and long-term responses to a tropical storm (Typhoon Haiyan). 6-mark: 'Predicting tectonic hazards is a waste of time'.	6-mark: impacts and management of a UK extreme weather event (Somerset Levels). 9-mark: 'To what extent is climate change the result of human actions?' 9-mark: mitigation compared with adaptation. 6-mark: changing one part of a small-scale UK ecosystem.	9-mark: 'Tropical rainforests should be protected from economic development'. 6-mark: causes and impacts of deforestation. 6-mark: plant and animal adaptations.	6-mark: challenges and opportunities for development in the Thar Desert. 9-mark: opportunities for development in a hot desert. 9-mark: strategies to reduce desertification.	6-mark: hydrographs and flood risk. 6-mark: costs and benefits of a flood management scheme (Jubilee River). 4-mark: how waterfalls, ox-bow lakes and levées form.	6-mark: how effective coastal management is (Holderness). 4-mark: how wave-cut platforms, spits and bars form. 6-mark: formation of coastal landforms.
Maths Across the Curriculum	The logarithmic Richter scale; comparing gross national income (GNI) per head for Nepal and Italy; percentages from bar charts; the Saffir–Simpson scale and wind-speed data.	Describing temperature graphs using TEA (trend, evidence, anomaly); calculating the change in Arctic sea ice; greenhouse gas percentages; biomass loss between trophic levels.	Interpreting and completing climate graphs; deforestation rates, percentage change and mean annual forest loss; reading choropleth maps of the Human Development Index (HDI).	Completing and describing climate graphs (Jaisalmer, Khartoum); diurnal temperature range; the Sahel rainfall anomaly graph.	Contours and spot heights; 4- and 6-figure grid references and distance on OS maps; plotting river width data; discharge = velocity × area (cumecs); reading hydrographs.	OS map grid references and distances; mean, median and mode of erosion rates; projecting erosion rates on a line graph; comparing the costs of management strategies (£ per metre).
Links to careers / aspirations	Volcanologist, meteorologist, hydrologist; emergency response and aid workers.	Meteorologist (Met Office), Environment Agency, climate scientist, ecologist.	Conservation worker, ecotourism guide, ecologist, sustainability consultant.	Renewable energy (solar and wind), tourism, land management and development work.	Environment Agency flood officer, hydrologist, civil engineer, Ordnance Survey.	Coastal engineer, local council planner, Environment Agency.
Cultural Capital	International aid organisations (the Red Cross, the United Nations and the World Health Organization) and the Disasters Emergency Committee; Nepal's World Heritage sites and the Dharahara Tower; Japan's annual earthquake drills.	International agreements: the Paris Agreement (2015) and COP26, the UN climate change conference in Glasgow (2021); the Met Office and UK storm naming; frost fairs on the Thames; Epping Forest, protected by the City of London since 1878.	Indigenous peoples of the Amazon and rainforest medicines (the rosy periwinkle); the work of the WWF (World Wide Fund for Nature) and other conservation organisations; the Brundtland definition of sustainable development; testing the myth that the Amazon produces 20% of the world's oxygen.	Jaisalmer, the 'Golden City': its UNESCO fort and Desert Festival; the African Union's Great Green Wall.	Ben Nevis and Yr Wyddfa (Snowdon); High Force and the Whin Sill; the Jubilee River protecting Windsor and Eton.	The Jurassic Coast, a UNESCO World Heritage Site; Durdle Door and Old Harry Rocks; around 30 villages lost to the sea on Holderness since Roman times.
Practical Application of Skills	Locating case studies on a world map; describing distributions from maps; annotating diagrams of plate margins, the global atmospheric circulation and tropical storm structure; tracking Typhoon Haiyan on a map.	Interpreting photographs and AQA figures; describing climate graphs; drawing and interpreting food webs; labelling biome and global circulation diagrams.	Drawing convectional rainfall and nutrient cycle diagrams; interpreting climate graphs and deforestation data; adding the Amazon to the case-study world map.	Completing a climate graph; labelling and describing the location of the Thar Desert; explaining how bunds work across a slope.	OS map work on a river valley (grid references, contours, distance); drawing long and cross profiles; interpreting hydrographs; annotated diagrams of river landforms.	Identifying coastal landforms on OS maps; drawing longshore drift; annotated diagrams of landforms of erosion and deposition; stakeholder conflict analysis for Holderness.