

YEAR 13 - PHYSICAL

Fundamentals	Skills
Unit 3	Qualitative skills and quantitative skills
 Nature, forms and potential impacts of natural hazards (geophysical, atmospheric and hydrological). Hazard perception and its economic and cultural determinants. Characteristic human responses – fatalism, prediction, adjustment/adaptation, mitigation, management, risk sharing – and their relationship to hazard incidence, intensity, magnitude, distribution and level of development. The Park model of human response to hazards. The Hazard Management Cycle. 	Students should develop the following with respect to qualitative data: use and understanding of a mixture of methodological approaches, including interviews interpretation and evaluation of a range of source material including textual and visual sources understanding of the opportunities and limitations of qualitative techniques such as coding and sampling, and appreciation of how they actively create particular geographical representations understanding of the ethical and socio- political implications of collecting, studying
 Global patterns of health, mortality and morbidity. Economic and social development and the epidemiological transition. The relationship between environment variables eg climate, topography (drainage) and incidence of disease. Air quality and health. Water quality and health. The global prevalence, distribution, seasonal incidence of one specified biologically transmitted disease, eg malaria; its links to physical and socio-economic environments including impacts of environmental variables on transmission vectors. Impact on health and wellbeing. Management and mitigation strategies. The global prevalence and distribution of one specified non-communicable disease, eg a specific type of cancer, coronary heart disease, asthma; its links to physical and socio-economic 	and representing geographical data about human communities. Students should develop the following with respect to quantitative data: understanding of what makes data geographical and the geospatial technologies (eg GIS) that are used to collect, analyse and present geographical data an ability to collect and use digital and geo- located data, and understand a range of approaches to use and analyse such data understanding of the purposes and difference between the following and to use them in appropriate contexts:descriptive statistics of central tendency and dispersion descriptive measures of difference and association, inferential statistics measurement, measurement errors, and sampling understanding of the ethical and socio-political implications of collecting, studying and representing geographical data about human communities.
 Ifestyles. Impact on health and well- being. Management and mitigation strategies. Role of international agencies and NGOs in promoting health and combating disease at the global scale. Earth structure and internal energy sources. Plate tectonic theory of crustal evolution: tectonic plates; plate movement; gravitational sliding; ridge push, slab pull; 	Specific skills The following sections identify specific qualitative and quantitative skills to be developed. Core skills Use and annotation of illustrative and visual material: base maps, sketch maps, OS maps (at a variety of scales), diagrams, graphs, field



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convection currents and sea-floor spreading.

- Destructive, constructive and conservative plate margins.
 Characteristic processes: seismicity and vulcanicity. Associated landforms: young fold mountains, rift valleys, ocean ridges, deep sea trenches and island arcs, volcanoes.
- Magma plumes and their relationship to plate movement.

Volcanic Hazards:

- The nature of vulcanicity and its relation to plate tectonics: forms of volcanic hazard: nuées ardentes, lava flows, mudflows, pyroclastic and ash fallout, gases/acid rain, tephra. Spatial distribution, magnitude, frequency, regularity and predictability of hazard events.
- Impacts: primary/secondary, environmental, social, economic, political. Short and long-term responses: risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation.
- Impacts and human responses as evidenced by a recent volcanic event.

Seismic Hazards:

- The nature of seismicity and its relation to plate tectonics: forms of seismic hazard: earthquakes, shockwaves, tsunamis, liquefaction, landslides. Spatial distribution, randomness, magnitude, frequency, regularity, predictability of hazard events.
- Impacts: primary/secondary; environmental, social, economic, political. Short and long-term responses; risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation.
- Impacts and human responses as evidenced by a recent seismic event.

sketches, photographs, geospatial, geolocated and digital imagery. Use of overlays, both physical and electronic. Literacy – use of factual text and discursive/creative material and coding techniques when analysing text. Numeracy – use of number, measure and measurement. Questionnaire and interview techniques.

Cartographic skills

Atlas maps. Weather maps – including synoptic charts (if applicable). Maps with located proportional symbols. Maps showing movement – flow lines, desire lines and trip lines. Maps showing spatial patterns – choropleth, isoline and dot maps.

Graphical skills

Line graphs – simple, comparative, compound and divergent. Bar graphs – simple, comparative, compound and divergent. Scatter graphs, and the use of best fit line. Pie charts and proportional divided circles. Triangular graphs. Graphs with logarithmic scales. Dispersion diagrams.

Statistical skills

Measures of central tendency – mean, mode, median.

Measures of dispersion – range, inter-quartile range and standard deviation. Inferential and relational statistical techniques to include Spearman's rank correlation and Chi-square test and the application of significance tests.

ICT skills

Use of remotely sensed data (as described above in Core skills). Use of electronic databases. Use of innovative sources of data such as crowd sourcing and 'big data'. Use of ICT to generate evidence of many of the skills provided above such as producing maps, graphs and statistical calculations.



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Storm Hazards:

- The nature of tropical storms and their underlying causes. Forms of storm hazard: high winds, storm surges, coastal flooding, river flooding and landslides. Spatial distribution, magnitude, frequency, regularity, predictability of hazard events.
- Impacts: primary/secondary, environmental, social, economic, political. Short and long-term responses: risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation.
- Impacts and human responses as evidenced by two recent tropical storms in contrasting areas of the world.

Fires in nature:

- Nature of wildfires. Conditions favouring intense wild fires: vegetation type, fuel characteristics, climate and recent weather and fire behaviour. Causes of fires: natural and human agency. Impacts: primary/secondary, environmental, social, economic, political. Short and long-term responses; risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation.
- Impact and human responses as evidenced by a recent wild fire event.

Case studies:

Case study of a multi-hazardous environment beyond the UK to illustrate and analyse the nature of the hazards and the social, economic and environmental risks presented, and how human qualities and responses such as resilience, adaptation, mitigation and management contribute to its continuing human occupation.

Case study at a local scale of a specified place in a hazardous setting to illustrate the physical nature of the hazard and analyse how the economic, social and political character of its community reflects the presence and impacts of the hazard and the community's response to the risk.