

## **HOT DESERT SYSTEMS AND LANDSCAPES (OPTION)**

<b>3.1.2.1 - DESERTS AS NATURAL SYSTEMS</b>	<b>R</b>	<b>A</b>	<b>G</b>
Systems concepts and their application to the development of desert landscapes – inputs, outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium			
The concepts of landform and landscape and how related landforms combine to form characteristic landscapes			
The global distribution of mid and low latitude deserts and their margins (arid and semi-arid)			
Characteristics of hot desert environments and their margins: climate, soils and vegetation (and their interaction)			
Water balance and aridity index			
The causes of aridity: atmospheric processes relating to pressure, winds, continentality, relief and cold ocean currents			
<b>3.1.2.2 - SYSTEMS AND PROCESSES</b>	<b>R</b>	<b>A</b>	<b>G</b>
Sources of energy in hot desert environments: insolation, winds, runoff			
Sediment sources, cells and budgets			
Geomorphological processes: weathering, mass movement, erosion, transportation and deposition			
Distinctively arid geomorphological processes: weathering (thermal fracture, exfoliation, chemical weathering, block and granular disintegration)			
The role of wind – erosion: deflation and abrasion; transportation: suspension, saltation, surface creep; deposition			
Sources of water in hot deserts: exogenous, endoreic and ephemeral; the episodic role of water; sheet flooding, channel flash flooding			
<b>3.1.2.3 - ARID LANDSCAPE DEVELOPMENT IN CONTRASTING SETTINGS</b>	<b>R</b>	<b>A</b>	<b>G</b>
Origin and development of mid and low latitude deserts: <b>aeolian</b> – deflation hollows, desert pavements, ventifacts, yardangs, zeugen, barchans and seif dunes			
Origin and development of mid and low latitude deserts: <b>water</b> – wadis, bahadas, pediments, playas, inselbergs			
Relationship between process, time, landforms and landscapes: characteristic desert landscapes			
<b>3.1.2.4 - DESERTIFICATION</b>	<b>R</b>	<b>A</b>	<b>G</b>
The changing extent and distribution of hot deserts over the last 10,000 years			
Causes of desertification – climate change and human impact; distribution of areas at risk			
Impact on ecosystems, landscapes and populations			
Predicted climate change and the impacts; alternative futures for local populations			
<b>3.1.2.5 - QUANTITATIVE AND QUALITATIVE SKILLS</b>	<b>R</b>	<b>A</b>	<b>G</b>
Quantitative and relevant qualitative skills, within the theme landscape systems, including observation skills, measurement and geospatial mapping skills, and data manipulation and statistical skills applied to field measurements			

<b>3.1.2.6 - CASE STUDIES</b>	<b>R</b>	<b>A</b>	<b>G</b>
Case study of a hot desert environment setting: to illustrate and analyse key themes set out above			
Case study of a hot desert environment setting: to engage with field data (exemplifying field data may be gathered in settings that experience some of the aeolian processes associated with mid and low latitude desert environments such as coastal dunes.)			
Case study at a local scale of a landscape where desertification has occurred to illustrate and analyse key themes of desertification, causes and impacts, implications for sustainable development			
Case study at a local scale of a landscape where desertification has occurred: Evaluation of human responses of resilience, mitigation and adaptation			