

Paper 2: Optional Theme: Drainage Basins and their Management



Annotate onto this copy of the IB Geography Syllabus:
Case Studies / Key Terms / Extended Response Questions / Models / Key Diagrams / Sketch Maps

<ul style="list-style-type: none"> • Mechanics of a drainage system 	<p>Understand the impacts of moving water in a drainage basin, especially the change in velocity.</p> <p>Understand the following terms: types of flow, channel shape, bed roughness (hydraulic radius), gradient, transportation, competence, capacity, erosion and deposition.</p> <p>Understand the principle of Manning's roughness coefficient, if only to dispel the view that streams flow more slowly in their lower courses than in their upper ones. Calculation of the coefficient is not required.</p>
<ul style="list-style-type: none"> • Controls on a drainage system 	<p>Appreciate that controls should not be viewed in isolation from one another but as an interacting set contributing to the behaviour of a drainage system, most notably in times of flooding. Study the following controls: basin size, shape and relief (including slope), atmospheric controls, rock type, soil, land use and vegetation.</p> <p>Understand hydrographs and how they vary in form in response to controls, and how to use them as an aid to explain discharge.</p>

3.1.2 Fluvial features in the landscape

- Landforms produced by erosion and deposition

Understand the relationship between landforms and the processes that have created them, especially the interplay between erosion and deposition.

Understand the evolution of fluvial or water-formed landscapes as the outcome of dynamic processes such as slope erosion, stream erosion and deposition.

Understand that the principle underlying the relationship between velocity and particle size (as shown by the Hjulström diagram) is the basis for understanding erosion, transportation and deposition.

Understand the formation of waterfalls and rapids, meanders and associated landforms, flood plains, braided channels, levees and deltas.

Be aware that changes in base level can affect erosion and deposition in the basin, and understand the concepts of rejuvenation, knickpoints and terraces.

- Natural and human-induced hazards

Be aware of the processes of flooding (flash and lag responses) and the effect of humans on fluvial processes, including the effect of urbanization on stream flow and percolation; urbanization and forestry on both flooding and stream siltation and the impacts of agriculture, mining and industry. Flooding is a natural phenomenon that can be exacerbated by the effects of human activity. Understand that changes in land use can affect flood recurrence intervals.

Study hazards in terms of risk vulnerability and response.

3.1.3 Managing the supply and demand for water

Understand that drainage basin management arises from matching water supply to demand from urban domestic needs, industry, hydro-electricity, irrigation, recreation and navigation.

Illustrate water management strategies with reference to a specific case study.

3.1.4 Issues in water utilization at a variety of scales

Discuss issues of water utilization with reference to specific case studies; one at each of local, national or regional, and international scales.