## Geomorphology and Surficial Processes (Domain D)

*[Note: Examples given below are descriptive only and are not all-inclusive lists of items]*

D-1. Basic processes
- D-1.1 Driving forces (e.g., climate, gravity, tectonics)
- D-1.2 Resisting forces (e.g., lithology, structure, friction)

D-2. Weathering and soil development
- D-2.1 Chemical weathering processes (e.g., oxidation, dissolution, hydrolysis) and products (e.g., clay minerals, laterite)
- D-2.2 Physical weathering processes (e.g., frost wedging, sheeting) and products (e.g., talus, grus)
- D-2.3 Soil development (e.g., profile/horizon development, residual [in-situ] vs transported)

D-3. Analysis of surficial materials
- D-3.1 Grain size analysis (e.g., sieve, hydrometer)
- D-3.2 Soil classification systems (e.g. USDA, USCS)
- D-3.3 Age dating techniques (e.g., relative vs. absolute; optical stimulated luminescence [OSL], radiocarbon)

D-4. Fluvial processes and landforms
- D-4.1 Erosional processes and landforms (e.g., cut bank, point bar)
- D-4.2 Depositional processes and landforms (e.g., delta, alluvial fan)
- D-4.3 Hydraulic gradient and equilibrium
- D-4.4 Channel morphology, patterns, and profiles (e.g., meandering, braided, dendritic, trellis)
- D-4.5 Sediment grain size and distribution
- D-4.6 Effects of external influences (e.g., climate, urbanization, changes in base level)

D-5. Mass movements and slopes
- D-5.1 Factors initiating movement (e.g., angle of repose, role of water)
- D-5.2 Classification of movement type (e.g., slump, slide, earthflow, debris flows, lahars)

D-6. Aeolian processes and landforms
- D-6.1 Erosional processes (e.g., deflation) and landforms (e.g., blowouts, desert pavement)
- D-6.2 Depositional processes and deposits (e.g., loess, dunes)

D-7. Glacial processes and landforms
- D-7.1 Formation, movement, and mass balance

D-7.2 Erosional processes (e.g., plucking, abrasion) and landforms (e.g., arete, cirque, horn)
D-7.3 Depositional processes and landforms/deposits (e.g., lateral moraines, kettles, till)
D-7.4 Sediment grain size and distribution
D-7.5 Isostatic effects
D-7.6 Effects of changing variables (e.g., climate, ice temperature, albedo)

D-8. Karst processes and landforms
D-8.1 Erosional processes and landforms (e.g., sinkhole, sinking stream, cave)
D-8.2 Hydrology and drainage
D-8.3 Cave development

D-9. Coastal processes and landforms
D-9.1 Erosional processes and landforms (e.g. wave-cut platforms)
D-9.2 Depositional processes and landforms (e.g. spits, barrier islands, tombolo)
D-9.3 Waves, tides, and currents
D-9.4 Drivers and effects of sea level change (relative and absolute, past and future)
D-9.5 Beaches and shorelines

D-10. Volcanic processes and landforms
D-10.1 General features (e.g. vent, crater, caldera)
D-10.2 Intrusive (e.g., dike, sill, batholith) and extrusive landforms (e.g. cinder, composite, shield)
D-10.2 Types of volcanic eruptions (e.g. plinian, strombolian) and associated deposits

D-11. Project planning and hazard analysis (***PG Only***):
D-11.1 Work scoping and cost estimating
D-11.2 Literature and regulatory review
D-11.3 Site-specific data, maps, and health & safety plans
D-11.4 Hazard identification and analysis