ZLGA College of Technology

DEPARTMENT COASTAL /MARINE GEOGRAPHY & ECOLOGY TECHNOLOGY.

ECOLOGY AND ENVIRONMENTAL STUDIES PROGRAMME

1. National Dipoma in Coastal /Marine Geography & Ecology Technology- 2 YEARS
2. Higher Diploma In Coastal /Marine Geography & Ecology Technology - 2 YEARS
3. Coastal /Marine Geography & Ecology TECHNICIAN - 3 YEARS
4. Certificate in Coastal /Marine Geography & Ecology - 2 YEARS.
5. Coastal /Marine Geography & Ecology Assistance - 2 YEARS

REQUIREMENTS: Same of Environmental Waste Technology programme.

EHY 203: HYDROGRAPHY I.

Introduction to Hydrography; Meaning and definition of hydrography; Four major components of hydrography; Methods of the hydrographic survey, Difference between hydrography and oceanography; Difference between bathymetry and hydrography; Hydrology and Hydrography; Relationship between hydrography and fisheries; Importance of hydrography; Importance of Hydrography Survey; largest ocean on earth, The Mariana Trench: Earth's Deepest Place. Unit Hydrography theory; Synthetic unit hydrography; Flood routing, Reservoir routing; Channel routing.

EHY 204: Hydrography II:

Hydrography analysis methods, Response functions of linear system; Probability and statistical methods for hydrographic data. Fitting probability and distributions. Hydrography and direct runoff hydrography.

EHY211: Basic hydrology I.

Hydrological cycle; global water budget; catchment and catchment system, Reynolds transport theorem; Atmospheric water. Water vapour dynamics; Precipitation; Forms of precipitation;

Types of precipitation; Perceptible water; Terminal velocity; thunder storm cell model; Measurement of rainfall; Rain gauge network; Representation and analysis of rain water; Evaporation measurement and estimation.

EHY121: Basic Hydrology II. (2 units)
Surface water; unsaturated flow, infiltration; Measurement of infiltration; Estimation of abstractions, Catchment storage concept; Runoff; Measurement of stream flow; Aquatic weed (water hyacinth) management (care, life cycle, removal, economic importance, uses, products).

EHY411: Engineering Hydrology (3 units).
Water cycle; complex interactions and pathways of water connecting atmosphere, lithosphere, and hydrosphere. Probability distributions for variables, Frequency analysis, extreme value distributions; Estimation of design floods frequency analysis.

EHY414: Coastal Hydrology (3 units).
Introduction - Hydrologic cycle, coastal setting, tides, waves, currents and their effects on coastal landforms. Coastal water bodies; water exchange between coastal water bodies; Tidal land forms - tidal inlets, intertidal flats and coastal wetlands; mangrove ecosystems; Coastal lagoons. Estuaries and river deltas. Anthropogenic impacts on coastal hydrology - Pollution, river dams, sedimentation, port and harbor developments, coastal structures including defense walls, piers and pipelines. Introduction to hydrological modeling.

ECG 304: Introduction to Oceanography (3 units)
Five bodies of bodies of water. Meaning and definition of oceanography. Importance of oceanography. Components of sea and ocean; Physical processes of sea (tectonic movement, volcanic activities, erosion, and, glaciations). Physical features of sea (ocean ridges, deep sea, ocean, abyssal plain, abyssal hills, fraction zones, seamounts and guyots); Physical features of ocean basins (mountainous ocean ridges, deap-sea, trenches and jagged, linear fraction zone, abyssal hill, seamounts and guyots. Features rising up from ocean floor. Components of sea bed; deepest part of the ocean; age and average depth; Number of minerals and metals in the ocean; The seven seas and the five ocean; sea-going tools.

ECG 305: Physical Processes and Sea Level Changes (3 units).
Physical processes of the sea; physical processes of the coastal and marine environment; Physical processes of the climatic change; physical process of air-water interaction. Natural resources management; Regional and marine cluster problems. Sea level changes - causes of sea level changes. Coastal impacts assessment of the risks associated with sea level rise - impacts on the coastal landform and ecosystem; Economic importance of sea-level rise.

ECG 201: Introduction to Coastal Geography (3 units)
Meaning of coast and coastal areas, examples of coastal areas, Coastal habitats (estuaries, coastal wetlands, seagrass meadows), coral reefs, mangrove forests, kelp forests, and upwelling areas; landforms found in a coastal landscape; Features of coastal landscapes (beaches, dunes, bays, cliffs, platforms, spits and lagoons); Coastal landscape; Why coastal landscapes different; Difference between coastline or seashore. Features of coastal landscapes (beaches, dunes, bays, cliffs, platforms, spits and lagoons), Coastal Landforms - Headlands and Bays, Caves, Stacks, Arches, and Stumps, Wave-Cut Platforms, Spits, Salt Marsh, Beaches, Delta landforms, Estuary Landforms. Coastal Landform Types- Delta Landforms, Estuary Landforms, Lakeshore Landforms, Rocky Coast Landforms., Sandy Coast Landforms, Tropical Coast Landforms.

ECG: 202: Coastal Erosion. (2 units)
Definition & types of coastal erosion: Attrition coastal erosion, Abrasion coastal erosion, beach erosion; and causes of coastal erosion; Marine and coastal processes, Transportation and deposition. Examples of deposition; Effects of coastal erosion on the environment; Ecological impacts of coastal erosion.

ECG: 303: Coastal Erosion and Protection. (2 units)
Types of deposition; types of transportation processes. Weathering and causes of weathering. Types of weathering. Process of weathering. Factors of weathering transportation of sediments (by water, wave from beaches, factors of wave formed beaches, Features formed wave erosion.

Coastal erosion prevention and control techniques. Economic effects of coastal erosion (advantages and disadvantages).

ECG: 403: Coastal deposition and landform Processes. (3 Units)
Coastal landforms and landform processes. Geomorphic processes. Submersion in coastal processes. Main processes of coastal deposition. Coastal deposition and land forms; Coastal area degradation; Causes of erosion deposition; Five landforms caused by coastal deposition. Tsumani walls. Spit formation; Different river processes. Glacier formation process. How groin works.

EMS 108: Environmental Pollution and Monitoring (3 units)
Meaning and definition of pollution; Types of pollution; Anthropogenic activities causing pollution, Types of Environmental monitoring - Air monitoring, water monitoring, waste monitoring, remote sensing, Monitoring materials, equipment and techniques; Advantages and disadvantages of environmental protection; Sampling techniques- for water, waste water, and air samples.