



DEPARTMENT OF ENVIRONMENTAL WASTE MANAGEMENT TECHNOLOGY.

This course is designed to have a holistic comprehension of solid and liquid waste management including municipal solid waste, electronic waste, plastic waste, biomedical waste, agricultural waste, hazardous waste including radioactive waste - generation, collection, segregation, treatment, characterization, processing, disposal, recycling, recovery, incineration, landfill, recomposing, vermicomposting, Basel convention on trans boundary movement of solid wastes and their disposal, remediation of contaminated site, Lean concept of waste management, 3Rs of One of the biggest challenges of urban sanitation is liquid waste management. It requires capital investment, skilled personnel and coordination between government and nongovernmental organizations; it also involves public awareness. Therefore, this course focuses on what happens to human excreta and other liquid wastes when they are produced.

1. Higher Diploma in Waste Management - 2 years
2. National Diploma in Waste Management - 2 years
3. Waste Management Technician - 3 years
4. Certificate in Waste Management - 2 years.
5. Waste Management Assistance - 2 years

REQUIREMENTS

HND IN ENVIRONMENTAL WASTE MANAGEMENT TECHNOLOGY

Programme: HND in Environmental Waste Management.

(Approved by West Africa Health Examination Board (WAHEB) and National Board for Technical Education [NBTE])

Requirements:

a) 5 O^oL credits (WASC,NECO, NABTEB) in English language, Biology, Chemistry, Mathematics, Physics, Geography.

(Not more than two (2) sittings).

b) National Diploma in Environmental Health by WAHEB for Direct Entry

COURSE DETAILS

EHT 203: Environmental Impact Assessment (EIA) (3 units)

Introduction to Environmental Management and Environmental Impact Assessment (EIA Legal policy and regulatory frame work. EIA procedure- scoping and screening and establishing baseline conditions. Methodologies. Connectedness: connected spaces, a sub-spaces, and connectedness of the real line, intermediate of value theorem. EIA methods, tools and techniques. Public involvement in EIA. Impact management - mitigation and preparation of Environment Management Plan (EMP). EIA reporting and review of EIA quality. Decision making and project management. Implementation and follow up. EIA case examples.

ESM 209: Introduction to Solid Waste Management (2 units)

Characteristics of solid wastes. Classification and examples of solid wastes- biodegradable, recyclable and non-degradable wastes; Solid waste generation sources; economically viable waste management practices. Advantages of properly organized waste management practices; recyclable materials; procedures for making organic fertilizer; Factors responsible for waste management risk. Impact of poor environmental sanitation on human health. Principles and practice of solid waste management from collection to transport and storage. Solid waste collection, transportation and storage techniques; Solid waste associated with the use of the solid waste collection, transportation, and storage facilities. Environmental impact on poor solid wastes dump hill.

ESM 309: Municipal Solid Waste Collection and Storage Techniques (1 unit)

Impact of poor environmental sanitation on human health. Principles and practice of solid waste management from collection to transport and storage. Solid waste collection. Transportation and storage techniques; Risk associated with the use of the solid waste collection, transportation, and storage facilities. Environmental impact on poor solid wastes management.

ESM 409: Municipal Solid Waste Treatment and Transformation (3 units)

Solid waste classification (biodegradable and non-degradable wastes). Waste sources and generation rates. Evaluation of the traditional methods of waste collection and disposal: Factors influencing waste generation and their environmental impacts; solid waste composition. Solid waste characterization: hazardous waste, radioactive waste, plastic waste, biomedical waste. Solid waste collection and storage techniques. Waste Solid waste management processes: transformation techniques of solid waste: Evaluation of other disposal options - incineration, pyrolysis, autoclaving, and compositing. Solid waste treatment facilities and equipment Recovery material facilities and waste-to-energy facilities. Methods of collection, transportation. Segregation, storage, characterization, recovery, recycling, incineration, and landfill. Environmental impacts of solid waste dump hill. Basel convention on transboundary movement of solid waste and their disposal, remediation of contaminated site, Lean concept of waste management, the 5S housekeeping tool etc.

ELM 201: Introduction to Liquid Waste Management.

Definition of waste management. Health implications of liquid waste. Fecal sludge management and challenges. Difference between sewage disposal and waste disposal. Different sanitation technologies and techniques for managing and disposing liquid wastes; Characteristics of liquid waste; Sources of faecal sludge; Faecal sludge management process; Desludging techniques, collection and transportation of faecal sludge; Pit emptying techniques; Methods of removing sludge from septic tanks, pit latrine and their challenges. Equipment used for desludging faecal and sludge maintenance. Risks associated with waste management.

ELM 302: Sewage Disposal and Application Technology.

Sewage and non-sewage. Types of sewage: domestic sewage, industrial sewage, greywater and blackwater. Objectives of sewage disposal. Purpose of sewage disposal. Functions of septic tank and soak away. Types of sewage treatment- primary, secondary and tertiary treatment; Difference between sewage and sewerage. Sewage disposal procedure. Components of sewer - receiving drains, manholes, pumping stations; storm overflows, screening chamber, or sanitary sewer, sludge byjus. Sewer types, Sewer treatment plants and their components; Sewage system and disposal technique, Sewer digester; Management of waste water and excreta conveyed in

sewer. Biogas and organic fertilizer from faecal sludge production technology. Preparation of dry sludge method and challenges.

EWM 303: Domestic Wastewater Management Technology. (2 units)

Sources of wastewater. Major components of wastewater, and storm wastewater. Types of wastewater: domestic waste, industrial waste, and storm wastewater; greywater and black water. Aims of waste water treatment. Method of storm water management; Functions of reed bed, waste water stabilization ponds, facultative and maturation ponds in water effluent treatment. Domestic waste water treatment system. Mechanical and biological treatment. Treatment stages - Preliminary, primary and secondary. Wastewater treatment process: wastewater treatment steps. Domestic waste water disposal methods. Environmental impact of domestic waste and storm waste water disposal.

ELM 302: Industrial Wastewater Management Technology (3 units)

Sources of industrial wastewater. Major components of industrial wastewater. Environmental impacts of industrial waste water. Industrial wastewater treatment process. Industrial wastewater treatment stages - primary secondary and tertiary waste water treatment. Industrial wastewater treatment technology: water treatment plants; micro bubble floatation (MBF), Induced Gas Floatation (IGF) technology; Use of gas liquid reactor, and pump; advanced oxidation processes (OPs), ion exchange, ultra-filtration and Nano-filtration, adsorption/bio sorption, advanced biological treatment using algae, and bacteria. Importance of wastewater aeration. Industrial waste water treatment equipment - sludge thickener equipment, sludge dewatering equipment, polymer dispensing machine. Industrial waste water disposal methods, and their environmental impact.

EES 211: Ecological problem of deforestation and desertification; Afforestation; Wildlife and conservations, Genetic basis of living resources management; Bioremediation of forest Resources.