VSS UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA
CIVIL ENGINEERING DEPARTMENT
CURRICULUM
For
B.TECH – 1ST & 2ND

BCE101-ENVIRONMENTAL SCIENCE & ENGINEERING (3-1-0) CR-04

Objective: This course introduces the students to the environmental consequences of industries, development actions etc. and the methods of minimizing their impacts through technology and legal systems.

Module – 1

Ecological concepts and natural Resources: Ecological perspective and value of environment, Environmental auditing, Biotic components, Ecosystem Process: Energy, Food chain, Environmental gradients, Tolerance levels of environmental factor,

Concept of hydrology: Hydrological cycle, water balance, energy budget, precipitation, infiltration, evaporation and evapotranspiration, Ground water, Ground water chemistry, contamination and pollution prevention.

Water quality Requirements: In- stream standards, potable water standards and wastewater effluent standards.

Water Quality in rivers: Organic content parameters DO and BOD demand in streams, Transformation and transport processes in water bodies, Streeter- Phelps Oxygen sag model.

Module – II

Water treatment: Water sources and their quality, Water treatment unit operations: Sedimentation, coagulation, fieeculation, Filtration, Disinfection. Lay out of a water treatment plant.

Waste water treatment: Waste water characteristics, waste water treatment processes, Pretreatment, Primary treatment, Secondary Treatment system: Activated sludge system, attached growth system, secondary clarification and wastewater disinfection. Lay out of a wastewater treatment plant.

Anaerobic digestion, its microbiology, methane production and application of anaerobic digestion.

Module-III

Air Pollution: Units of measurement, sources and classification of air pollutants, criteria and non-criteria pollutants.
Elemental properties of atmosphere: Heat, pressure, wind, Moisture and RH. Influence of meteorological phenomena on air quality cr4iteria pollutants: Lapse rate, Pressure systems, winds and moisture.

Air Quality: National Ambient Air quality Standards. Emission standards from industries. Noise pollution: Physical properties of sound, Noise criteria, Noise standards, Noise measurements, Noise control.

Module-IV

Solid waste management: Source, classification and composition of MSW, Properties and classification, separation, storage and transport of MSW, MSW management, Waste minimization of MSW, Reuse and recycling, Biological treatment, Thermal treatment, land fill, integrated waste management,

Hazardous Waste management: Hazardous waste and their generation, Medical hazardous waste, Household hazardous waste. Transportation and treatment of hazardous waste: Incinerators, Inorganic waste treatment, handling of treatment plant residue.

Environmental impact Assessment: Origin and procedure of EIA, project screening for EIA, Scoping studies, preparation and review of EIS. Indian environmental laws.

Text Book:

1. Environmental Engineering, G. Kiely, TMH, 2007

References:

1. Environmental Engineering, H.S. Peavy, D.R.Rowe and G. Tchobanoglous, McGraw Hill, 1985.
2. Principles of E Environmental Engineering and Science, M.L Davis and S.J. Masen, MGH, 2004.

BCE191-ENGINEERING DRAWING (0-0-3) CR-02

Concept of orthographic projection, projections of points, straight lines, planes and solids.

Intersection of solids and development of surfaces.

Isometric Projection.

Text Book:

1. Engineering drawing by N.D. Bhatt and V.M Panchal, Charotar Publishing House, Anand.

Reference Books:

1. Engineering Drawing by Venugopal