RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Civil Engineering, VII-Semester

Departmental Elective CE 702(B) Environmental Engg-II

(L-T-P: 3-1-0, Credit: 4)

Course Objectives:

O1:To design waste-watertreatment units by giving fundamental knowledge of primary, secondary and advanced wastewater treatment technologies.
O2**:** To learn fundamental concept of Air pollution, its behavior in atmosphere and introduction of Air-pollution chemistry.

Unit –I: Unit operations for waste-water treatment

Theory and design of preliminary treatment such as screens, grit chamber, sedimentation and chemical clarification, role of micro-organism in biological treatment.

Unit - II: Biological Treatment of waste-water

Methods of Biological Treatment (Theory & Design) –Trickling Filter, Activated Sludge process (ASP), Oxidation ditch, Septic tank &imhoff tank,theory of sludge.

Unit – III: Advanced Waste-water treatment

Diatomaceous earth filters, Ultrafiltration, Adsorption by activated carbon, Phosphorus removal, Nitrogen removal.

UNIT IV: Introduction of Air pollution

Definition, Sources, classification and characterization of air pollutants. Effects of air pollution on health, vegetation & materials, photochemical smog.

UNIT V: Air pollution chemistry

meteorological aspects of air pollution dispersion; temperature lapse rate and stability, wind velocity and turbulence, plume behaviour, dispersion of air pollutants, the Gaussian Plume Model.

Course Outcomes:
At the end of the course, students would be able to

CO1: Carry out municipal wastewater treatment system design and operation.
CO2: Analyze and design of biological treatment plant, ponds, and various tanks.
CO3: Apply knowledge of environmental treatment technologies and design processes.

CO4: Apply knowledge of Air pollution and Air-pollution chemistry.

Reference Books:

1. Water Supply & Sanitary Engg. - G.S. Birdie - Dhanpat Rai Publishing Company, 2. (P) Ltd. New Delhi
3. Waste Water Engg. by B.C. Punmia - Laxmi Publication (P) Ltd. New Delhi
4. Environmental Engg. - M.L. Davis & D.A. Cornwell - Mc Graw Hill Company

5. Chemistry for Environmental Engg. - Sawyer & Mc Carty - Mc Graw Hill Book Company New Delhi
6. Water & Waste Water Technology - Mark J Hammer - Prentice - Hall of India, New Delhi
7. Waste Water Engineering - Metcalf & Eddy - Mc Graw Hill Book Company New Delhi