

CH401 ENVIRONMENTAL ENGINEERING AND SAFETY

Credits: 4 (L = 4, P = 0)

(Pre-requisite: None)

Course Details:

Detail 1:

Introduction of environment, eco-system and biosphere; hydrologic cycle and nutrient cycle; impact of man on the environment.

Atmospheric pollution:

Sources and effects; nature of pollutants and their sampling and measurements; control methods viz. gravitational settling chambers, cyclone separator, fabric filters, electrostatic precipitator, scrubbers etc.; dispersion model; chimney, flares and incinerators; ozone hole depletion and green house effect.

Water pollution:

Sources and classification of water pollutants; domestic and industrial waste water treatment; sampling and analysis; sedimentation; clarification, flotation; concept of BOD, COD, TDS; biological treatment; activated sludge process; trickling filters; recovery of materials from process effluents; design of water pollution control equipment.

Detail 4: Noise and thermal pollution.

Classification and control of hazards:

Hazardous properties of chemicals: Flammability, reactivity, and toxicity. Hazard identification and system safety techniques; storage, transport and handling of hazardous chemicals. Job safety analysis; process safety management. Prevention

Reference Books:

Environmental pollution control engineering:

Wiley Eastern Ltd.

C S Rao

Mahajan:

Tata-McGraw Hill

Pollution control in process industries

Introduction to Environmental Engineering (2nd Edition):

McGraw Hill

M L Davis & D A Cornwall

Accident Prevention Manual for Industrial Operations:

Chicago, USA

National Safety Council

Environmental Science & Engineering:

Prentice Hall International

J G Henry & G H Heinke