GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: II

Environmental Management

Subject Name Environmental Modelling

Sr.No	Course content
1.	Introduction: Scope of Environmental Modelling, Mass balances, Basic concepts of transport phenomena, Chemical reaction kinetics, equilibrium, chemical modelling.
2.	Environmental Modelling: Eutrophication of lakes, stoichiometry, phosphorus as a limiting nutrient, mass balance on total phosphorus in lakes ,dynamic ecosystem, Models for Eutrophication Assessments
3.	Conventional pollutants in rivers: Introduction, mass balance equation, plugs flow systems, Streeter-Phelps equation, modifications to Streeter Phelps equation, Dissolved oxygen in rivers & estuaries.
4.	Ground water contamination: Introduction, Darcy's law, flow equations, Contaminant solute transport equation, Bio transformations.
5.	Climate and climate system modelling: Climate change and general circulation models, models of the atmosphere and oceans, models of the atmospheric chemistry and aerosols, global carbon box.

Term work:

Term work will comprise of assignment and exercises based on mass balances, Basic concepts of transport phenomena, chemical modeling, Eutrophication of lakes, Conventional pollutants in rivers, ground water contamination, climate and climate system modeling.

Reference Books:

1. Environmental modelling: Fate & transport of pollutants in Water, Air and Soil by Jerald L Schnoor.
2. Environmental Modelling by John Wainwright & Mark Mulligan
3. Modelling the Eutrophication Process by M W Lorenzen