

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VIII
ENVIRONMENTAL SCIENCE AND ENGINEERING

Subject Name: Ground Water Contamination

Subject Code:181305

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	2	0	5	70	30	30	20

Sr No	Course Contents
1	Introduction: Definition of ground water, aquifers, vertical distribution of subsurface water.
2	Ground water hydraulics: Darcy's law, its range of validity, Dupuit Forchheimer assumptions, Applications of Darcy's law for simple flow systems, Governing differential equations for confined and unconfined aquifers, Steady and unsteady flow solutions for fully penetrating
3	Ground water quality: Indian and international standards
4	Sources of Ground water pollution: Sources that are at (i) Ground Level,(ii) Below Ground Level but above Water Table (iii) Below Water Table
5	Transport of Ground Water Contamination Transport Mechanisms, Dispersion and diffusion, Retardation, Numerical Flow and Transport Modeling
6	Ground water Restoration and Treatment Source control strategies, Treatment technologies, In situ treatment methods, Pump and treat method, Bioremediation
7	Ground water conservation: Ground water budget, seepage from surface water, artificial recharge

Reference Books:

1. Ground Water : by Raghunath
2. Ground Water Hydrology: By D K Todd
3. Ground water Remediation and treatment technologies by Nicholas Cheremisinoff

Term Work:

Term work will comprise of assignments on the questions based on

1. Definition of terms used in ground water hydrology
2. Numericals on Darcy's law, Dupuit law for yield.
3. Ground water contamination,
4. Assignment of questions transport of contaminants
5. Methods of treatment of contaminated ground water