

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E Semester: 3

Environment Science & Engineering

Subject Code 131301

Subject Name Environmental Science – I

Sr. No	Course content
1.	Familiarization with labware and instruments: Glass ware, Plastic ware and measuring instruments, calibration and standardization of lab ware and instruments, cleaning solutions; cleaning and washing procedures for chemical and microbiological analysis; precision and data.
2.	Distilled and dematerialized waters: Methods of preparing distilled waters, comparison of methods; high purity waters, tests of distilled and dematerialized waters; handling standard methods.
3.	Preparation of standard solutions: Relationship of atomic, molecular, formula and equivalent weights and solutions, requirements of primary standards, stock solutions and their standardization, characteristics of common laboratory chemicals. Qualitative analysis of radicals: Quantitative tests for identification, characteristics of common laboratory chemical.
4.	Quantitative analysis: Volumetric and gravimetric analysis, estimation of purity of chemicals, analysis of items cements, alums and coagulants, neutralization, complexometry, redox titrations, pH metric and conductometric titrations.
5.	Instrumental Analysis: • Conductivity meter, pH meter, Turbidity meters.
6.	General Chemical concepts: Modern periodic tables and generalizations; Molar, Molal, formal and normal solutions; Bonding systems; acids and bases; metals and non metals, oxidation and reduction, gas laws; dissociation constants, conductivity and ionization , activity coefficient primary and secondary solutions, units of expression and their interrelationship, precision and accuracy, aqueous solubility of salts.

REFERENCE BOOKS:

1. Standard Methods
2. Environmental Chemistry - Sawyer & McCarty
3. Environmental Chemistry by A.K.De