

Devi Ahilya University, Indore, India Institute of Engineering & Technology				BE -I Year (Common to all branches) (Part-Time)			
Subject Code & Name	Instructions Hours per Week			Credits			
	L	T	P	L	T	P	Total
ACP1C2: Applied Chemistry & Environmental Science	2	1	1	2	1	1	4
Duration of Theory Paper: 3 Hours							

Objectives: This course is designed with two objectives: first to learn chemistry of various engineering materials, their properties, testing, structure-property relationship and their applications in various technologies. Secondly to aware with various environmental issues and pollution and control studies in modern society.

Prerequisite: Nil

COURSE OF CONTENTS

UNIT-I

Water and its applications: Sources, impurities, applications, Hardness- its expression and determination; Boiler troubles and their causes; Industrial water requirement, Treatment of water for industrial purpose; De-ionization of water; Analysis of water; Water quality parameters, Numerical problems on water analysis and water treatment processes.

UNIT-II

Engineering materials and testing: Introduction, classification and requirement of engineering materials. Material testings.

Polymers: Chemistry of polymer materials and their diversification; Types of polymerization and their brief account; Examples of polymers.

Cement, Glass and Refractories: Different types, composition, properties and uses.

UNIT-III

Lubricants: Introduction, Principle and functions of lubrication, Types of lubricants, Properties, tests and applications of solid, semi-solid and liquid lubricants; Synthetic lubricants and lubricating emulsions.

UNIT-IV I

Instrumental techniques in material characterization: Classification, Lamberts and Beers Law; Introduction, Principle and applications of Colorimetry, IR, UV-Vis, NMR and Mass spectroscopy; Chromatographic Techniques and applications, Numerical Problems on spectroscopic techniques.

UNIT-V

Environmental science: Components of Environment and their interactions, Natural resources, Ecosystem, Impacts of development of environment, Environment protection act, EIA, Sustainable development.

Pollution and its types, Description, effects and control measures of Air, Water, Land and Noise pollution, Chemical toxicology, Global warming, Depletion of ozone layer, Acid rains, Eutrophication, Rain water harvesting, Pollution case studies.

BOOKS RECOMMENDED:

- [1] Jain & Jain, Engineering Chemistry, Dhanpat Rai Publications, 2007.
- [2] S. S. Dara, A Text Book of Engineering Chemistry, S. Chand & Company, 2007.
- [3] B. Joseph, Environmental Studies, Tata McGraw Hill.
- [4] A.K. De, Environmental Chemistry, New Age International, 1996.
- [5] Shashi Chawala, A Text Book of Engineering Chemistry, Dhanpat Rai Publications, 2006.