

SARDAR PATEL UNIVERSITY
Programme: MSC (Applied Science)
Semester: II
Syllabus with effect from: December 2013

Paper Code: PT02EASC01	Total Credits: 4
Title Of Paper: Environmental Science, Health & Safety	

Unit	Description in detail	Weightage (%)
1	Introduction: Degradation of Materials in different Environments: Atmospheric, underground marine & Industrial environment pollution, vacuum and space environment, biophysical; Sources of air pollutions, water pollution (fluoride and arsenic contamination); Industrial Effluents, pollution due to Sewage and Sludge, pesticides pollution, Solid waste problems, metal pollutants (e.g., As and fluoride); Environmental carcinogens, Control of pollution; Effects of heat, radiation and moisture.	25 %
2	Degradation and Weathering of Materials: Weathering, Air & Moisture, Radiation and Heat, Pollutants, Microbial degradations, Control of deterioration, thermal protection; Optical properties, solar cells, Lubrications, sublimation/evaporation, loss of materials; Thermal shock. Life tests such as Dry heat tests; Damp Heat Tests; Altitude Tests for Contaminants, water Immersion Tests, Protection against fungal attack.	25 %
3	Protection of Materials: Controlled Environment, Packing, Insect proof packaging, Rodent proof packing, Air Conditioning, Constant damp heat and cyclic damp heat, Humidity and cycles of humidity, Nuclear planer plant, radiation safety measures, radioactive isotope, solar flash, cosmic and cosmic radiation	25 %
4	Modeling of Environment Effect: Field exposure trials, climatic trials, Climatic trial with one correspondence; Accelarated Trial, Reliability, Creep-properties, Stress properties, Fatigue properties, Microstructure and Materials Economy and Control.	25 %

Basic Text & Reference Books:

- Theory of Corrosion and Protection of Metals, Tomashov N. D., The Macmillan Company
- Corrosion engineering, M. G. Fontana, TATA McGraw Hill Edition, Published by Tata McGraw Hill Publishing Company Limited
- Science of Engineering Materials, Manas Chanda, Macmillan Publishers
- Waste recycling for energy conservation, Davidkut and Gerard Nare
- Irwing Kaplan- Nuclear Physics, Addison-Wesley Publishing Company
- Kenneth S. Krane-Introductory Nuclear Physics, Wiley Publications

