

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E. SEMESTER : VII**  
**ENVIRONMENTAL SCIENCE & TECHNOLOGY**

**Subject Name: Corrosion & its control in Industries**

**Subject Code: 173505**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	1	0	4	70	30	30	20

Sr No	Course Contents
1	The economic aspects of corrosion; Case studies. Some examples of catastrophic corrosion failures.
2	Corrosion inspection, instrumentation and monitoring. Principal engineering materials for equipment. Corrosion of stainless steel
3	Use of DSA in electrochemical industries, corrosion control using exotic materials
4	Fabrication of special alloys, stainless steels, less common metals, composite materials plastics etc. welding techniques and corrosion behavior of weldments
5	Design aspects to minimize corrosion. Chemical cleaning of equipment, corrosion and control methods for water supply systems, cooling systems and hot water systems, underground and marine environments.
6	Corrosion in nuclear reactors and boilers. Corrosion in pipelines. Internal and external protection of pipelines. Corrosion of reinforcements in concrete structures. Design of cathodic and anodic protection systems. Selection of materials for sacrificial anodes, anodes for impressed current methods of protection. Corrosion control in industrial environments. Temporary corrosion prevention methods and use of inhibitors in industry.

**Reference Books:**

1. M. G. Fontana and N. D. Grene, Corrosion Engineering, McGraw Hill, 2<sup>nd</sup> Edition, 1978.
2. G. L. and Kristal, Corrosion in Chemical Apparatus, Shavartz, M. M. Chapman Hall Ltd., London, 1959.
3. Corrosion and Corrosion Control , Reive and Uhlig, John Wiley and Sons, 2008
4. Principles and Prevention of Corrosion, Denny Jones, Macmillan Pub Co., 1991
5. Corrosion Engineering : Principles and Practice, P Roberge, Mc Graw Hill, 2008