

MSE 882 Corrosion Control Engineering

CHs: 3

Pre-requisites: Nil

Course Objectives:

- Understanding basic electrochemistry and electrochemical fundamentals
- Learning various forms of corrosion
- Techniques to investigate and analyzing corrosion
- Familiarize various protection techniques and their applications

Course contents:

- Electrochemical aspects of corrosion, EMF series and various corrosion cells,
- Polarization, Thermodynamics and kinetics in corrosion, passivation,
- Types of corrosion, Pitting and crevice corrosion, galvanic corrosion, stress corrosion cracking, Sulfidation, Soil corrosion and microbiologically induced corrosion, Cavitation and fretting, corrosion and fatigue,
- High temperature corrosion and oxidation
- Corrosion evaluation techniques,
- Corrosion control by design, Passivation, Corrosion Inhibitors,
- Cathodic protection, Anodic protection
- Materials selection and Coatings

Course Outcomes:

- The student should be able to understand mechanisms of various types of corrosion including high temperature damage to materials.
- The students will be familiarized on various corrosion control techniques and their application at relevant locations

Recommended Text / Reference Books:

Handbook of corrosion engineering (Pierre R. Roberge)
Principles and Prevention of corrosion (Denny A. Jones)
Corrosion and Corrosion control (Herbert H. Uhlig)