

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA Session: 2022-23			
Discipline: Metallurgical Engineering	Semester: 6th	Name of the Teaching Faculty: Goutam Kumar Majhi	
Subject: Corrosion Engineering (TH-04-A)	No. of days/per week class allotted: 4	Semester from Date: 14. 02. 2023 to Date: 23.05.2023 No. of weeks: 14	
Week	Class No.	Module	Lecture Topics
1	1	Chapter -1: Introduction to Corrosion	Introduction
	2		Cost of corrosion
	3		Direct loss and indirect loss
	4		importance of corrosion studies
2	5		Classification of types of corrosion
	6		electrochemical corrosion and chemical corrosion
	7		-do-
	8		Corrosion rate
3	9	Chapter -2: Corrosion principles	electrochemical principle of corrosion
	10		-do-
	11		Faraday's 1 st law
	12		-do-
4	13		Faraday's 2nd law
	14		-do-
	15		Deviation from Faradays law
	16		-do-
5	17	Chapter-3: Types of electrochemical cells	Galvanic cell
	18		-do-
	19		Concentration Cell
	20		Electrolytic cell
6	21		Difference between various types of electrochemical cell
	22		-do-
	23	Chapter-4: Electrode potential	Electrode potential
	24		Construction of EMF series
7			-do-
	25		Application and drawbacks of EMF series
	26		Galvanic series
	27		Comparison between EMF and Galvanic series
	28		Tutorial class for Ch1,2,3 &4

8	29	Chapter-5: Different forms of corrosion	Broad Classification of forms of corrosion
	30		Atmospheric corrosion
	31		Intergranular corrosion
	32		Sensitization in SS
9	33		Knife line attack
	34		Pitting corrosion
	35		Corrosion fatigue
	36		Galvanic corrosion
10	37		-do-
	38		Stress corrosion cracking
	39		-do-
	40		Cavitation corrosion
11	41		Fretting corrosion
	42		High temperature oxidation corrosion
	43		Stray current corrosion
	44	Chapter-6: Corrosion Prevention	Methods for prevention of corrosion
12	45		-do-
	46		Importance of proper selection of materials
	47		Role of electrode potential in prevention
	48		Cathodic Protection
13	49		Anodic Protection
	50		Characteristic of protective coating
	51		-do-
	52		Metallic coating
Extra classes	53		Non-metallic Coatings
	54		Advantages and methods of coatings
	55		Inhibitors
	56		Types of inhibitors
	57		Tutorial for Ch5 & 6
	58		Revision Class
	59		Revision Class
	60		Important question discussion