

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA Session: 2021-22				
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: 10. 03. 2022 to Date: 10.06.2022 No. of weeks: 13		
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	electrochemical corrosion and chemical corrosion
	6			-do-
	7			Corrosion rate
	8			
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	-do-
	14			Deviation from Faradays law
	15			-do-
	16			
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	
	-do-			
7	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