



## VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

### Department of Metallurgy & Materials Engineering

### Lecture Plan- **NON FERROUS EXTRACTIVE METALLURGY**

<b>Subject Name</b>	:	Non-Ferrous Extractive Metallurgy
<b>Credits</b>	:	3-1-0
<b>Department</b>	:	Metallurgy & Materials Engineering
<b>Session</b>	:	2016-17 (Even Semester)
<b>Level</b>	:	Undergraduate (VI-Semester)
<b>Course Instructor</b>	:	Subhadra Sahoo
<b>Category</b> of	:	Compulsory course for all B.Tech VI Semester students of MME Department.

<b>Class Schedule</b>			
Tuesday – B320	Thursday – B320	Friday – B320	Saturday – B320
4:10-5.00 PM	3:20-4:10 PM	11:20-12:10 PM	8:00-08:50 AM

<b>Marks Distribution</b>		
End Term	Mid Term	Assignments + Class Test
<b>70</b>	<b>20</b>	<b>10</b>
<b>Total -100 Marks</b>		

#### Required Text book

1. Cost-free, PowerPoint visuals & extended notes are furnished to students by Instructor
2. Extraction Of Non Ferrous Metals by H.S ROY, R.Sridhar, K.P. Abraham

## COURSE CONTENTS

Sl. No	TOPIC	HOURS
1.	Brief History of Non-Ferrous Metal & its Source	1
2.	Source of Non-Ferrous metal	1
3.	Factor governing nonferrous extraction	
4.	Extraction of metal from Sulphide ores	1
5.	Extraction of Copper from pyro metallurgy route	1
6.	Steps involves in Extraction of Cupper	1
7.	Fire refining and electrolytic refining of Cupper	
8.	Newer process For Extraction of Cupper	1
9.	Hydrometallurgy For Extraction of Cupper	1
10.	Extraction of zinc in pyro metallurgy route	1
11.	Extraction of zinc by Imperial Smelting Process	1
12.	Properties and application of lead	1
13.	Extraction of lead from lead Bullion	
14.	Modern development of Lead Smelting	1
15.	Production of Lead in media	1
16.	Extraction of Nickel by pyro metallurgy	1
17.	Extraction of Nickel by from oxide ore	1
18.	Steps for Extraction of nickel by from oxide ore	1
19.	Hydrometallurgy of Nickel Sulphide concentrate	1
	<b>CLASS TEST -1</b>	<b>1</b>
20.	Extraction of Metal from Chlorides	1
21.	Extraction of Magnesium	1
22.	Alkali & Alkaline Earth Metal	1
23.	Alkaline Earth metal	1
24.	Pidgeon process for Magnesium	1
25.	Magnesium production in India	1

CLASS TEST -2		1
26.	Extraction of Aluminium	1
27.	Bayer's process for extraction Aluminium product	1
28.	Hall-Heroult process for Aluminium production	1
29.	Environmental Consideration in Aluminium Production	1
30.	Newer Process for Aluminium Production	1
31.	Properties and uses of Zirconium	
32.	Extraction of Zirconium from Zirconium sponge	1
33.	Zirconium production in India	1
34.	Extraction of Titanium	1
35.	Treatment of ilmenite for upgradation	1
36.	Chlorination of Titanium oxide	1
CLASS TEST -3		1
37.	Titanium reduction by Titanium Chloride	1
38.	Extraction of Tin	1
39.	Extraction and Refining of Niobium	1
40.	Environmental pollution and its address related to various metal extraction processes	1

**Note for students:**

1. This is the syllabus; I planned for the "NON-FERROUS EXTRACTIVE METALLURGY" course of Session 2016-17 (Even semester). If you have any query/suggestions mail me on [subhadrasahoo007@gmail.com](mailto:subhadrasahoo007@gmail.com)
2. Our course includes Assignments (from every chapter) and Class test.
3. By end of this course student must have 75% attendance, to eligible for the end semester examination.