

# GUJARAT TECHNOLOGICAL UNIVERSITY

## Diploma in Metallurgy Engineering

### Semester: 3

**Subject Code**

**Subject Name** NON FERROUS PRODUCTION METALLURGY

Sr. No.	Course content
1.	<b>INTRODUCTION :</b> 1.1 Importance of Extractive Metallurgy. 1.2 Importance of Non Ferrous metals.
2.	<b>ORE CRUSHING AND SIZING :</b> 2.1 Ore, mineral, gangue, flux and slag. 2.2 Importance of ore dressing. 2.3 Types of crushers and grinders. 2.4 Understand the working of various types of crushers and grinders. 2.5 Sizing of ore. 2.6 Types of sieves.
3.	<b>ORE CONCENTRATION PROCESS :</b> 3.1 Importance of ore concentration. 3.2 Explain principle and working of cone classifier. 3.3 Gravity concentration process. 3.4 Flootation process. 3.5 Magnetic separation. 3.6 Dewatering of wet ore.
4.	<b>PRINCIPLES OF EXTRACTION :</b> 4.1 Types of extractive process. 4.2 Explain pyro-metallurgical process. 4.3 Explain Hydrometallurgy process. 4.4 Explain electrometallurgy process 4.5 Agglomeration of concentration ore. 4.6 Roasting, calcining and fluxes.
5.	<b>EXTRACTION OF NON FERROUS METALS :</b> 5.1 Know the ores, procedure of extraction, equipment and machinery, principal, flow sheet, refining, alloying, uses for the following non ferrous metals and alloys : Copper (ii) Zinc (iii) Tin (iv) Aluminum (v) Lead.
6.	<b>EXTRACTION OF URANIUM :</b> 6.1 Principles of production of Uranium. 6.2 Properties and application of Uranium for Nuclear purposes. 6.3 Safety precautions for radio active metals.

**Reference Books:**

1. Metallurgy of non ferrous metals by W.H.Dennis
2. A Text book of metallurgy by A.R.Bailey
3. General metallurgy by B. Kuzenstove
4. Elements of metallurgy by D. Swarup
5. Extractive metallurgy by J. Newton
6. Principal of mineral dressing by A.M.Gaudin
7. Principles of extractive metallurgy by H.S.Ray & A. Ghosh.