SUBJECT NO-MT41031, SUBJECT NAME- EXTRACTIVE METALLURGY OF NON-FERROUS METALS

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Prerequisite - Principles of Ext. Met.Thermodynamic considerations and process selection in pyrometallurgical extraction of metals like Cu, Ni, Pb, and Zn from sulfide ores, extraction of Sn and Mg from oxide ores, extraction of Ti and Zr through halide route. Refining by oxidation, chemical transport reactions, zone refining,distillation etc. Alternative processes like. Noranda, Mitsubishi, Q-S and WORCRA in Cu extraction, ISP in Zn extraction. Kinetics, mechanism and processes for leaching of pure metals, oxide and sulfide ores; bioleaching. Thermodynamics of reduction by gases for obtaining metals from solution. Ion exchange and solvent extraction processes-their application in extraction processes of Zr, V, Th, Nb, Ta etc. electrowinning and electro refining of metals - aqueous (Cu, Ni, Au, Ag) and fused salt (Al and Mg). Recovery of by-product metals and treatment of metallurgical wastes. Numerical problems related to extraction and refining of metals.Text Books:1.Fathi Habashi : Principles of Extractive Metallurgy, Vols.1,2and 3,Gordon and Breach, 1970.2.H.S.Ray,R.Shridhar and K.P.Abraham: Extraction of nonferrous metals, East west Press, New.Delhi, 1985.