

MME 301: Engineering Metallurgy

Introduction to metallurgy. Steelmaking processes. Brief description of each process and their technology. Raw materials requirement and steelmaking practices. Type of fuels and fluxes used in each process routes. The physical chemistry of iron making in each process and their respective controls. Thermodynamics and kinetics of steelmaking viz refining of hot metal steelmaking processes. Secondary steel making processes and manufacture of alloy steel principles. Hardening of metals. Deformation and annealing of metals. Corrosion and oxidation phenomena. Alloy steels. Stainless, creep and heat resisting steels. Cast irons. Metallurgical aspect of metal joining. Electrical and magnetic alloys. Copper and its alloys. Polymers. Aluminium. Magnesium and light alloy. Titanium, tungsten and hard metals.