

## **MME 507: Metallurgical & Materials Plant and Process Design**

Fundamental principles of design. Design of metallurgical processing systems. Method of estimating process cost and profitability. Translation of process design to plant design. Process flowsheet. Plant flow sheet. The application of fundamental metallurgical principles to the design process which includes thermodynamics, rate phenomena, unit operations and pilot plant design. Design stages: laboratory scale, pilot plant and industrial scale. Introduction to modeling and simulation as applied to metallurgical processes. Selection and design of process. General characteristic of metallurgical/materials processing equipment. integration of process units into a working plant, its construction and operations. Case studies on design of metallurgical equipment: furnace, ball mills, sintering plant metal forming mills floatation cells etc. Feasibility of design including energy requirements for new plant design. Industrial design assignment for students.