MT245 August 3

Transport Processes in Process Metallurgy

Instructor

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Teaching Assistant

NA
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Department: Department of Materials Engineering

Course Time: Tue., Thu., 3 - 4:30 PM

Lecture venue:

Detailed Course Page:

Announcements

Brief description of the course

This course can be taken by Metallurgy, Materials, Chemical and civil engineers as it prepares the students with basic foundation in transport processes which occur in other disciplines also.

Prerequisites

None

Syllabus

Basic and advanced idea of fluid flow, heat and mass transfer. Integral mass, momentum and energy balances. Friction factor. The equations of continuity and motion and its solutions. Concepts of laminar and turbulent flows. Transient and steady state heat and mass transfer. Natural and forced convection. Heat transfer and mass transfer coefficients. Concept of packed and fluidized bed. Non-wetting flow. Unit processes in process metallurgy. Application of the above principles in process metallurgy.

Course outcomes

Student would be able to understand the basic transport processes which are occurring in the daily life in their respective disciplines and would be able to explain the complex phenomena up to some extent.

Grading policy

50% assignment

50% exam

Assignments

Resources

J. Szekely and N.J. Themelis, Rate Phenomena in Process Metallurgy, Wiley, New York, 1971

G.H. Geiger and D R Poirier: Transport Phenomena in Metallurgy, Addison-Wesley, 1980.

D.R. Gaskell: Introduction to Transport Phenomena in Materials Processing, 1991.

R.B. Bird, W.E. Stewart and E.N. Lightfoot: Transport Phenomena, John Wiley International Edition, 1960

F.M. White: Fluid Mechanics, McGraw Hill, 1994

J.F. Davidson and D. Harrison, Fluidization, Academic Press, 1971

Various research papers