UCH601 CHEMICAL REACTION ENGINEERING-II

L	T	P	Cr
3	1	0	3.5

Non-ideal Flow: Residence time distribution of fluids in vessels, Models for non-ideal flow- one and two parameter, Conversion calculation using RTD data for first order reactions.

Non-catalytic Heterogeneous Reactions: Fluid-Solid reaction kinetics, Fluid-solid reaction models, Determination of rate controlling step, Prediction of mean conversion in flow reactors, Fluid-solid contacting schemes, Reactor design.

Solid-catalyzed Reactions: Interaction of physical and chemical rate processes, Kinetics of catalytic reactions and application to reactor design for isothermal and adiabatic operations, Experimental reactors, Design of fixed and fluidized bed reactors, Introduction to slurry and trickle-bed reactors.

Fluid-fluid Reactions: Introduction to fluid-fluid reaction systems, Rate equations, Reactor design for straight mass transfer and for mass transfer with chemical reaction.

Text Books:

1. Levenspiel, O., Chemical Reaction Engineering, John Wiley & Sons (2007).
2. Smith, J.M., Chemical Engineering Kinetics, McGraw Hill (1990).

Reference Books:

1. Fogler, H.S., Elements of Chemical Reaction Engineering, Prentice Hall of India (1997).
2. Denbigh, K.G., and Turner,J.C.R., Chemical Reactor Theory - An Introduction, Cambridge University Press (1984).
3. Nauman, E.B., Chemical Reactor Design, John Wiley & Sons (1987).