

CHE-847 Chemical Kinetics & Reactor Design

Credit Hours: 3

Pre-requisites: Nil

Course Objectives

- The course aims at:
 - Basic understanding of chemical reactor design
 - Methodologies that incorporate both scale-up and hazard analysis.

Course Contents

- Reaction mechanism and rate expressions & Thermodynamics of chemical reactions
- Reaction rate expressions & Fundamentals of reactor design
- Non-isothermal reactors & Fluid mixing in reactors
- Residence time distribution in flow reactors & Application of CFD in reactors
- Biochemical reactions & Safety in chemical reaction engineering
- Reactor sizing and scale up
- Details of lab work workshop practice (if applicable).

Course Outcomes

- How to select the best reactor for any particular chemical reaction
- To estimate its size, to obtain the best operating conditions.

Recommended Reading (including Textbooks and Reference books)

- Modeling of chemical kinetics and reactor design By A.K. Coker
- Introduction to Chemical reaction engineering and kinetics By R.W. Missen, C.A. Mims, B. A. Saville
- Introduction to Chemical reaction engineering and kinetics by Joel H. Ferziger, Milovan Perić
- Introduction to Chemical reaction engineering and kinetics By Panagiotis D. Christofides