CH205 Jan 3:0

Chemical Reaction Engineering

Instructor

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Teaching Assistant

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Department: Chemical Engineering

Course Time: MWF 10-11

Lecture venue: Chemical Engg. Classroom

Detailed Course Page: http://venuiisc.wixsite.com/lab2a/courses

Announcements

Brief description of the course

Chemical Reaction engineering (CRE)course is for Graduate students with a background in Chemical

Engineering or those who have already completed an undergraduate course on CRE.The course entaiils design

of chemical reactors for complex reaction systems.

Prerequisites

Undergrad course on CRE

Syllabus

Overview of Chemical Reaction Engineering

The Attainable Region theory

Analysis of Multiple Reactions and Design of Ideal Reactors

Non-Ideal Reactor Analysis

Thermodynamics and Kinetics of Reactions

Concepts in Catalysis

Multiphase Reactor Design

CFD for Reactive Flows

Course outcomes

Identify appropriate reactor networks for a given reacting system

Ability to generate appropriate reaction schemes for a given set of reactants

Perform non-ideal reactor analysis

understand elements of catalytic processes

Handle complex design problems using computational tools

Grading policy

Assignments -- 20%

Class participation - 10%

Mid term tests -- 20%

Final Exam -- 50%

Assignments

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Resources

Recommended Books:

â€¢ Ming, D., Glasser, D., Hildebrandt, D., Glasser, B., and Metzger, M., Attainable Region Theory â€" An Introduction to Choosing an Optimal Reactor

â€¢ Doraiswamy, L.K., and Uener, D., Chemical Reaction Engineering â€" Beyond the Fundamentals

â€¢ Levenspiel, O., Chemical Reactor Omnibook

â€¢ Schmidt, L.D., The Engineering of Chemical Reactions

â€¢ Chorkendorff, I., and Niemantsverdriet, J. W., Concepts of Modern Catalysis and Kinetics

â€¢ Pangarkar, V. G., Design of Multiphase Reactors

â€¢ Ranade, V., Computational Flow Modeling for Chemical Reactor Engineering