



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Kinetics and Reactor Design

CBE 3610

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Lecture

Course Description:

Chemical and engineering principles for the design and operation of chemical reactors; kinetics of simple homogeneous systems and introduction to heterogeneous catalysis.

Prerequisites and Co-requisites:

Prereq or concur: 3508 or FABEng 3120, and enrollment in CBE, FABEng, or EngPhysics major; or Grad standing; or permission of instructor.

Course Goals / Objectives:

- Upon completion of this course, a student should be able to: Use reaction equations, rate laws, and stoichiometry to balance elements in reactors.
 - Understand criteria for chemical equilibrium
 - Design simple isothermal and non-isothermal chemical reactors
 - Apply combined material and energy balances in batch, CSTR, PFR reactors
 - Analyze multivariable data and apply mathematical tools for solving multiple differential and/or algebraic equations
 - Work ethically with other students, engaging in discussions and working independently as appropriate
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Course Topics:

- Introduction, Mole balances, Reactor types, Conversion and Reactor Sizing
 - Rate Laws and Stoichiometry
 - Isothermal Reactor Design
 - Collection and Analysis of Rate Data
 - Multiple Reactions
 - Non-elementary Homogeneous Reactions
 - Non-isothermal Reactor Design
 - Non-isothermal Reactor Design, Example problems
 - Catalysis and Solid Catalyzed Reactions
 - Review
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Designation:

Elective

Required