

## **CHE-920    Advanced Reaction Engineering**

**Credit Hours:** 3

**Prerequisites:** CHE-847 Chemical Kinetics & Reactor Design

**Course Objectives:**

To give through understanding of advanced principle of kinetics, catalysis and reactor analysis

**Course Contents:**

- Review of kinetics and reactor design equations
- Heterogeneous catalysis
- Catalyst preparation
- Catalyst characterization
- Catalyst testing
- Catalytic reaction mechanism,
- Diffusion and reaction in catalyst pellets
- Conversion equations
- Reactor analysis
- Industrial catalytic reactions

**Course Outcomes:**

- Understanding of the mechanism and kinetics of heterogeneous catalytic reactions
- Choice of catalytic materials, preparation and characterization of catalysts
- Consideration of mass and heat transfer effects in heterogeneous catalysis
- Ability to analyze and reactors for heterogeneous catalytic reactions

**Recommended Books:**

- Essentials of Chemical Reaction Engineering, 2<sup>nd</sup> Edition, H. Scott Fogler, 2001.
- Chemical Reaction Engineering, 3<sup>rd</sup> Edition, Octave Livenspiel (1999)