Instructor Information	
Name	
Room NO.	
Phone Number	
E-mail	
Office Hours	

Course Information	
Course Name	Advance Chemical Reaction Engineering
Course Number	0905722
Perquisites	0905421 and 0905422
Credit Hours	3
Semester	
Class Meeting	

Course Description	
Course Objectives	1. To understand and analyze multiphase reaction systems: noncatalytic fluid solid reactions, Gas/liquid and liquid/liquid reactions, analyze multiphase reactions involving catalysis, design of heterogeneous reactors. 2. Analyzing non-ideal flow reactors: residence time distribution and effect of micro-mixing. 3. Reactor modeling and analysis
Text Books	Levenspiel O., The Chemical Reactor OmniBook, 3ed., Oregon St Univ Bookstores (June 1996)
References	1. Levenspiel O., Chemical reaction engineering, 3ed., John Wiley and Sons, New york, USA, 1999Fogler, The Elements of Chemical 2. Mark E. E. Davis,, Robert J. J. Davis, Fundamentals of Chemical Reaction Engineering, McGraw-Hill Science/Engineering/Math; 1 edition (July 22, 2002)

Course Assessment		
Assignments and Quizzes	10.0%	
Project	10.0%	
Midterm	30.0%	
Final Exam	50.0%	

Course Contents
1. Introduction to multiphase reaction system 2. Noncatalytic fluid solid reactions, 3. Gas/liquid and liquid/liquid reactions, 4. Multiphase reactions involving catalysis: catalysis and kinetic catalytic models 5. Mass transfer and reaction in porous solids 6. Non-ideal flow reactors: residence time distribution and effect of micromixing. 7. Design of heterogeneous reactors: packed bed and fluidized bed reactors. 8. Modeling of chemical reactors

Responsibilities

To succeed in this class, you should read the relevant material before coming to class, make a reasonable effort to do the assigned homework, hand in what you accomplish, and ask questions on points that you do not understand. I will lecture on points in the book and on supplemental topics, attempt to answer all serious questions, make myself available to anyone needing extra help, administer fair but demanding exams, and grade and return assignments in a reasonable time.

Expected Course Outcomes

1. Describe the algorithm that allows the student to solve multiphase chemical reaction systems.
2. Understanding the effect of mass transfer in reaction systems involving multiphase.
3. Analyzing non-ideal reactors.

Regulations

I. Attendance:

Attendance of classes is obligatory. Absence must be verified according to the university's regulation, ***please take it serious***.

II. Quizzes and homework

All students are required to finish their homework assignments, and submit them on time. Late homework ***will not be accepted*** under any circumstances. Popup quizzes will be given without any prior notice. You need to come prepared to class. A hand calculator is recommended to be available in every class**.** In addition to the final exam, there will be one midterm exam. These exams will be challenging and comprehensive during the class

IV. Conduct in classroom:

While in the class room, all cell phones, Laptops need to be turned off.