0

Department of Chemical Engineering

Chemical Processing Lab. (64428)

Total Credits	1

major compulsory

Prerequisites	P1 : Chemical Reaction Engineering (64421) OR Chemical Reaction Engineering (64320) P2 : Practical Analytical Chemistry (23215)

Course Contents

Part A: Manual measurement of species concentration. Safety in Reaction lab. Homogeneous Batch Reactor Neutralization of Aqueous Solution Of Acetic Acid Mixing Behavior under Various Operating Conditions Scale up rules in the mixing tank. Effect of solution viscosity on mixing behavior in stirred tank reactors Mixing degree Measurements using spectrophotometer. Plug flow reactor Part B: Chemical Reactor trainer Batch Reactor, Adiabatic Reaction Batch Reactor, Isothermal Reaction Continuous Stirrer Tank Reactor Tubular Flow Reactor Stirred Tanks in Series

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Design&conduct experiments, as well as to analyze &interpret data using different types of reactors and mixers.	B	70 %
2	Communicate effectively by writing technical report about each conducted experiment in chemical processing lab.	G	10 %
3	Use the techniques, skills &modern engineering tools necessary for engineering in order to present and calculate the operational parameters based on experimental data using excel spread sheets and related software.	K	10 %
4	Show an understanding of professional &ethical responsibility during performing the experiments and in writing the reports.	F	10 %

Textbook and/ or Refrences

Prepared Lab Manual References: 1- Elements of Chemical Reaction Engineering, Fourth edition, 2004, ISBN 0-13-253220-4 H.Scott Fogler 2- Chemical Reaction Engineering, second edition, 1999, ISBN 0 471-53019-0 O. Levenspiel

Assessment Criteria	Percent (%)
Quizzes	10 %
Reports	40 %
Laboratory Work	15 %
Final Exam	35 %

Course Plan

Week	Topic
1	Safety in Reaction lab.
2	Part A: Manual measurement of species concentration Homogeneous Batch Reactor
3	Neutralization of Aqueous Solution Of Acetic Acid
4	Mixing Behavior under Various Operating Conditions
5	Scale up rules in the mixing tank.
6	Effect of solution viscosity on mixing behavior in stirred tank reactors
7	Mixing degree Measurements using spectrophotometer.
8	Plug flow reactor
9	Part B: Chemical Reactor trainer Batch Reactor, Adiabatic Reaction
10	Batch Reactor, Isothermal Reaction

11	Continuous Stirrer Tank Reactor
12	Tubular Flow Reactor
13	Stirred Tanks in Series
14	Final exam