

2nd semester 2018

Department of Chemical Engineering			
Principles of Chemical Engineering Calculations (10626202)			
Total Credits	3		
major compulsory			
Prerequisites	P1 : General Chemistry II (10231102)		
Course Contents			
This course aims at studying material and energy balances in feedback and continuous systems, as well as chemical reaction and non-reaction systems. The course also covers multiple and single stage systems, concepts of units, chemical engineering calculations, synthesis of chemical processes, analysis of chemical processes by material and energy balances, behaviors of fluids, enthalpy calculations for changes of temperature, phase and chemical reactions, unsteady state of energy and material balances. The course ends with a full study of an industrial operation.			
Intended Learning Outcomes (ILO's)		Student Outcomes (SO's)	Contribution
1	Apply knowledge from mathematics and science to define process system variables for basic process calculations.	A	40 %
2	Identify, formulate, and solve steadystate material and energy balance for single and multistep units with recycle and bypass for reactive and nonreactive processes	E	45 %
3	Analyze, apply and design a typical chemical engineering process to meet the desired need	C	15 %
Textbook and/ or References			
Felder, R. M. & Rousseau, R.W., (2004). Elementary Principles of Chemical Processes. (3rd edition). John Wiley & Sons. ISBN 047168757X (Textbook)			
Assessment Criteria		Percent (%)	
First Exam		20 %	
Second Exam		20 %	
Quizzes		10 %	
Homeworks		10 %	
Final Exam		40 %	
Course Plan			
Week	Topic		
1	Part One: Engineering Problem Analysis Chapter 1: Introduction to Chemical Engineering and what can they do for living?		
2	Part One: Engineering Problem Analysis Chapter 2: Introduction to Engineering Calculations		
3	Part One: Engineering Problem Analysis Chapter 3: Processes and Process Variables		
4--8	Part Two: Material Balance Chapter 4: Fundamentals of Material Balances		

9--10	Part Two: Material Balance Chapter 5: Single – Phase Systems
10--13	Part Two: Material Balance Chapter 6: Multiphase Systems
13--15	Part Three: Energy Balance Chapter 7: Energy and Energy Balance