SKKK1113
Principles of Chemical Processes 1
Section: 02

COURSE OUTLINE

Department of Energy Engineering
Faculty of Chemical & Energy Engineering
Universiti Teknologi Malaysia, 81310 UTM
Johor Bahru, Johor, Malaysia

Outline of this Lecture

- *About Myself*
- *Synopsis of the Course*
- *Course Outcomes*
- *References*
- *Topic*
- *Teaching Methodology*
- *Assessment*
- *Tests*

About Myself

Instructor	:	**HASRINAH HASBULLAH**
Position/ Room No.	:	**Senior Lecturer** N01- 202 Department of Energy Engineering Faculty of Chemical & Energy Engineering Universiti Teknologi Malaysia 81310 UTM Johor Bahru, Johor, Malaysia Tel.: +(6)07-55 35516
Email	:	hasrinah@petroleum.utm.my
Lectures	:	**MONDAY** 0900 – 1100 N03 1-3 **WEDNESDAY** 0900 – 1000 N03 1-3 **WEDNESDAY** 1000 – 1100 (T) N03 1-3
Course website	:	http://elearning.utm.my / http://fcee.utm.my/hasrinah/

Synopsis of the Course

- This course introduces students to the **chemical engineering profession** and the **fundamental operations of chemical process equipment**.
- Providing students with the **basic principles of chemical engineering material balances** as well as calculation techniques to solve material balance problems for chemical process systems and equipment.
- Providing students with the basic principles of the **First Law of thermodynamics** and its applications.

Course Outcomes

CO1

Indicate basis, unit conversion, process diagram for various chemical processes and process variables when solving problem

CO2

Calculate mass balance on single or multiple process units with or without recycle, purge, or bypass streams for non-reactive processes

CO3

Construct the mass balance calculations on single or multiple process units with or without recycle, purge, or bypass streams for reactive processes

CO4

Perform mass balance calculations of single phase system

CO5

Analyze mass balance calculations of multiple component gas-liquid systems at equilibrium

CO6

Solve the problems using first law of thermodynamics and conservative equations by identifying forms of energy, reference state conditions and state properties

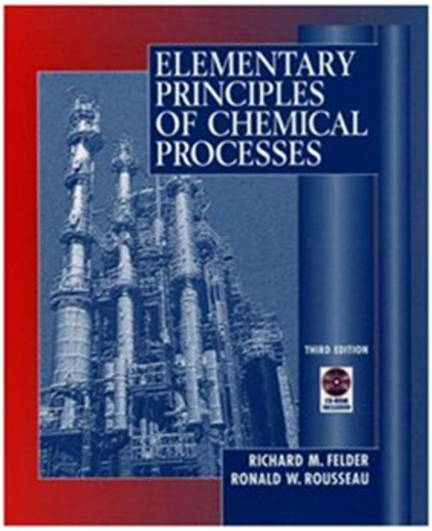
CO7

Conduct complex problem solving solution of mass and energy problem using principle of conservation

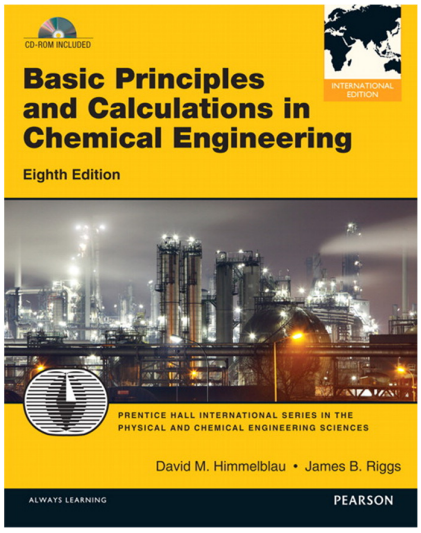
CO8

Commit in preparation of learning experience through reflections

References



Elementary Principles of Chemical Processes
Third Edition
Felder, R.M. and Rousseau, R.W.

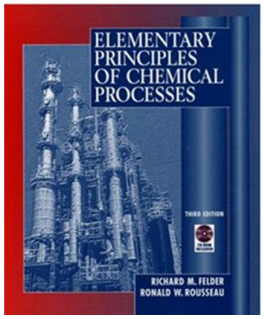


Basic Principles and Calculations in Chemical Engineering
Eighth Edition
Himmelblau, D.M. and Riggs, J.B.

Topics to be Discussed

Main Text:

Felder, R.M. and Rousseau, R.W. *Elementary Principles of Chemical Processes*, 3rd ed., John Wiley & Sons, New York, 2000.



Introduction to Engineering Calculations	*Chapter 02*
Process and Process Variables	*Chapter 03*
Fundamentals of Material Balances	*Chapter 04*
Material Balances on Reactive Processes	*Chapter 04*
Single Phase Systems	*Chapter 05*
Multi-Phase Systems	*Chapter 06*
Energy Balance for Closed and Open Systems	*Chapter 07*

Teaching Methodology

- **Content delivery through lectures**
  - Lectures are given based on the **active learning** approach.
  - For each of the subtopics, **at least one example** of test or exam standard will be discussed to enhance students understanding on the subject matter.
- **Tutorial**
  - Students will be divided into **groups**.
  - Students are required to **discuss and solve the questions** given in their group
- **Group project**
- **Independent study**

Assessment

The breakdown for grading is as follows:

Assignment and Quiz	:	10%
Critical Thinking and Problem Solving (CTPS), Life Long Learning (Developing E-Portfolio)	:	5%
Project	:	5%
Test 1	:	10%
Test 2	:	10%
Test 3	:	10%
Final exam	:	50%
TOTAL	**:**	**100%**

Tests

- Test 1
  - ✓ CO1 , CO2
  - ✓ **09/3/2016** : DK8 N24 8.00 – 10 pm
- Test 2
  - ✓ CO1 , CO2, CO3
  - ✓ **13/4/2016** : DK8 N24 8.00 – 10 pm
- Test 3
  - ✓ CO1 , CO4, CO5
  - ✓ **18/5/2016** : DK8 N24 8.00 – 10 pm
- Final exam
  - ✓ CO1 , CO2, CO3, CO4, CO5, CO6
  - ✓ **As scheduled**