

SKKK1113

Principles of Chemical Processes 1

Section: 05

COURSE OUTLINE



Department of Renewable Energy Engineering
Faculty of Petroleum & Renewable 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
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Lectures : **MONDAY 1100 – 1300 N29a (AMTEC) Seminar room**
WEDNESDAY 0900 – 1000 N03 1-3
WEDNESDAY 1100 – 1200 (T) N03 1-3

Course website : <http://elearning.utm.my>
<http://www.petroleum.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

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

CO3

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

CO5

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

CO7

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

CO2

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

CO4

Perform and **analyse** mass balance calculations of single phase system

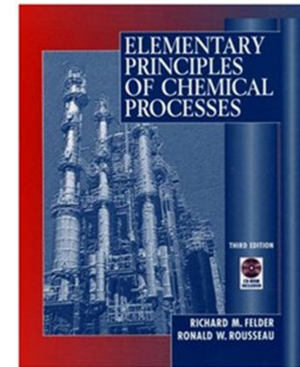
CO6

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

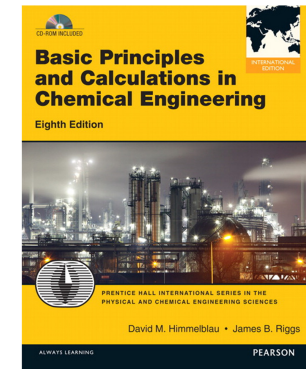
CO8

Commit in preparation of learning experience using E-Portfolio

References



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

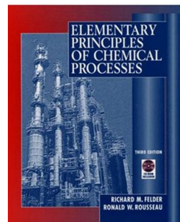


Basic Principles and Calculations in Chemical Engineering
Eighth Edition
Himmelblau, D.M. and Riggs, J.B.

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%
Projects	:	5%
Test 1	:	10%
Test 2	:	10%
Test 3	:	10%
Final exam	:	50%
TOTAL	:	100%

Tests

- Test 1
 - ✓ CO1 , CO2
 - ✓ **25/3/2015** : DK7 N24 8.00 – 10 pm
- Test 2
 - ✓ CO1 , CO2, CO3
 - ✓ **29/4/2015** : DK7 N24 8.00 – 10 pm
- Test 3
 - ✓ CO1 , CO4, CO5
 - ✓ **26/5/2015** : DK7 N24 8.00 – 10 pm
- Final exam
 - ✓ CO1 , CO2, CO3, CO4, CO5, CO6
 - ✓ **As scheduled**