MUTAH UNIVERSITY
Faculty of Engineering
Department of Chemical Engineering

Unit Operations / Separation Processes

COURSE SYLLABUS

Course Code	Course Name	Credits	Contact Hours
0404459	**Unit Operations / Separation Processes**	**3**	

INSTRUCTOR/COORDINATOR	
Name	**Prof. Adnan Al-Harahsheh**
Email	Adnan@mutah.edu.jo
Website	

TEXTBOOK

- Geankoplise ,Transport process and unit operation,7ed edition,1993
- Henley, Ernest J. & Seader, J. D., "Equilibrium-Stage Separation Operations in Chemical Engineering", John Wiley & Son, 1981.

Other Supplemental Materials

- *Unit Operations of Chemical Engineering,Fifth Edition, 1993,By McCabe,W.L.*
- Separation Process Engineering, *2nd edition, 2007, by Wankat*

SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

Modeling and design equations for: Gas absorption, Batch and continuous distillation of binary systems, Batch and continuous Liquid-liquid extraction, Batch and continuous Liquid-solid extraction (Leaching), adsorption, crystallization.

B. Pre-requisites (P) : 0404437

C. Course Type (Required or Elective)

Required (Compulsory department course)

SPECIFIC GOALS

A. Specific Outcomes of Instruction

a. *Understand the concept of vapor liquid equilibrium(1)*
b. *Carry out overall mass and energy balances around a distillation column(2)*
c. *Solve flash distillation problems (1,2)*
d. *Solve batch distillation problems(1,2)*
e. *Solve and analyze binary continuous distillation problems using Lewis and McCabe-Thiele methods (2)*
f. *Understand the operations of a packed column(1)*
g. *Solve and analyze absorption and stripping problem (1,2)*
h. *Solve and analyze liquid-liquid extraction systems(1,2)*
i. *Solve and analyze liquid-solid extraction systems(1,2)*
j. *Solve and analyze adsorption system(1,2)*
k. *Solve and analyze crystallization problem(1,2)*

B. Student Outcomes Addressed by the Course

1	2	3	4	5	6	7				
✓	✓									

BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Introduction to Separation Processes	1	3
Vapor-Liquid Equilibrium and Flash distillation	2	3
Batch distillation	3-4	6
Continuous distillation-McCabe Thiele Method &	5-8	12
Introduction to Staged and packed column design	9	3
Absorption and Stripping	10-12	9
Liquid-Liquid Extraction Process	13	3

Liquid-Solid Extraction Process	14	3
Adsorption Process	15	3
Crystallization Process	16	3
Total	16	48

METHODS OF ASSESSMENT			
No.	**Method of assessment**	**Week and Date**	**%**
1	Online first exam	8th week	**20**
2	Online second exam	12/week	**20**
3	Home works + quizzes	Through semester	**10**
4	Online final examination	End of Semester	**50**
Total			**100**