



MUTAH UNIVERSITY
Faculty of Engineering
Department of Chemical Engineering



Equipment Design

COURSE SYLLABUS

Course Code	Course Name	Credits	Contact Hours
0404565	Equipment Design and Plant Economics	3	

INSTRUCTOR/COORDINATOR	
Name	Prof. Adnan Al-Harabsheh
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Website	

TEXTBOOK
<p>No mandatory textbook is required. However, the following (among others to be announced) will be used as sources.</p> <ul style="list-style-type: none">○ Chemical Engineering (vol. 6), Coulson, J. M. & Richardson, J. F. (2003). Pergamon Press, Oxford.○ Plant Design and Economics for Chemical Engineers. Peters, Timmerhaus, West. McGraw Hill (2003).○ Chemical Process Design and Integration. R. Smith. Wiley (2005).
Other Supplemental Materials
<ul style="list-style-type: none">- Chemical Engineering Design. Towler and Sinnott. Elsevier (2008).- Product and Process Design Principles. Seider, Seader, Lewin, Widadgo. 3rd edition. Wiley (2009).

SPECIFIC COURSE INFORMATION

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

This course aims to enhance the basic concepts in equipment design and plant economics. The course includes: Studying equipment design in chemical engineering through understanding the selection of materials of construction, design of pipes and pumping systems, compressors, tanks, pressure vessels, storage equipment, heat exchangers, and plate and packed towers. Specification sheets, Economy and costing of equipment.

B. Pre-requisites (P) : 0404459

C. Course Type (Required or Elective)

Required (Compulsory department course)

SPECIFIC GOALS**A. Specific Outcomes of Instruction**

1. Design of pipes & pumping system (,2,4,7)
2. Understand the material of selection of construction (1,2,4)
3. Design heat transfer equipment, understand heat exchanger sizing and develop a heat exchanger data sheet (1,2).
4. Design storage vessels and various parts of vessels (e.g. heads, Shell, bottom plate).(1,2,4)
5. Design of Mass transfer equipment (staged & packed distillation column)(,2,4,7)
6. Demonstrate relationship between equipment design, safety and environment (2)
7. Evaluate equipment cost (2,4)

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 Equipment Design	1	3
• Selection of material of construction & Equipment fabrication	2,3	6
• Chemical process diagrams	4,5	6
• Fluid flow &, Piping system & Pumps	6,7,8	9
• Tanks, pressure vessels, storage equipment	9	3
• Design of Heat exchangers.	10,11	6
• Design of Plate & packing Distillation Column	12,13,14	9
• Economy and costing of equipment	15	3
• Review	16	3
Total	16	48

METHODS OF ASSESSMENT

No.	Method of assessment	Week and Date	%
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1	Online Mid Examination	8 th week	30
2	Hw, quizzes	Through /14 weeks	10
3	Project	12 th week	10
4	Online final examination	End of Semester	50
Total			100