MUTAH UNIVERSITY
Faculty of Engineering
Department of Chemical Engineering

Pant Design Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0404568	Plant Design	3	48

INSTRUCTOR/COORDINATOR	
Name	Prof. Taha M. Alkhamis
Email/Office	alkhamis@mutah.edu.jo
Office Hours	M: 11^{15}-12^{15}, T: 11-12
Classroom/Time	M, W: 9^{30} - 11^{00} M: in-class, W: online

TEXTBOOK	
Title	Chemical engineering Coulson & Richardson – chemical engineering design, Volume 6
Author/Year/Edition	R.K. Sinnott, 4th Edition, Elsevier, 2005
Other Supplemental Materials	
Title	Plant design and economics for chemical engineers
Author/Year/Edition	Peters and Timmerhaus, McGraw-Hill, 3rd, and 4th Editions, 1980&2001.

SPECIFIC COURSE INFORMATION

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

This course is planned to cover the following subjects in relation to chemical plants design: an introduction to optimization, flow sheeting, waste heat recovery (heat exchanger network design), design information and data, safety and loss prevention, the concept of rule of thumb in plant design, and a design case study.

B. Pre-requisites (P) or Co-requisites (C)

0404565 + 0404567

C. Course Type (Required or Elective)

Required (Compulsory department course)

SPECIFIC GOALS

A. **Course Learning Objectives (CLOs)**

By the end of this course, the student should be able:

1. Applying engineering judgment to solve design problems **(SLO 1)**

2. Evaluating design alternatives **(SLOs 2&4)**
3. Recognizing safety, environmental, economic, legal, and social issues, and their impact on chemical plant design **(SLO 4)**
4. Developing required communication skills to be able to defend their proposed design (oral and written) **(SLOs 1&4)**

B. Student Learning Outcomes (SLOs) 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 • Introduction to optimization	**2**	**6**
• Flow Sheeting and split fraction concept and application	**2**	**6**
• Plant Design (Case Study)	**3**	**9**
• Energy recovery and related issues • MID-TERM EXAM	**2**	**6**
• Design information and data	**1**	**3**
• Safety and loss prevention	**2**	**6**
• Energy optimization principles (Heat exchanger network design)	**2**	**6**
• Projects presentations + FINAL EXAM	**2**	**6**
Total	**16**	**48**

EVALUATION

Assessment Tool	Due Date	Weight (%)
Mid Exam	8th Week	30
Course Work (Homework, Quizzes, Projects)	To be announced	20
Final Exam	To be announced by Registrar (15th& 16th Weeks)	50

ABET's Students Learning Outcomes (Criterion # 3)

	Relationship to program outcomes		
ABET 1-7		**Weights (1-5)**	**… Engineering Student Outcomes**
1.	√	5	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2.	√	5	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic
3.			ability to communicate effectively with a range of audiences
4.	√	5	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5.			an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and
6.			an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7.			an ability to acquire and apply new knowledge as needed, using appropriate learning strategies