MUTAH UNIVERSITY
Faculty of Engineering
Department of Chemical Engineering

Experimental Design Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0404450	**Experimental Design**	3	

INSTRUCTOR/COORDINATOR	
Name	**Eng.Bahia Maitah**
Email	Bahia_76@mutah.edu.jo
Website	

TEXTBOOK

Course Textbook: Jiju Antony, "Design of Experiments for Engineers and Scientists" 2nd Edition, Elsevier Science & Technology Books, 2014.

Other Supplemental Materials

In addition to the above textbook the material of this course will be in the form of handouts from the following references:

Ref 1: Zivorad Lazic, "Design of Experiments in chemical Engineering," WileyVCH, 2004

Ref 2: Box, G., Hunter, W., and S. Hunter, "Statistics for Experimenters" John Wiley and Sons, 1978.

SPECIFIC COURSE INFORMATION

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

Introduction to statistical distributions, descriptive statistics, regression and correlation, analysis of variance, randomized block designs, full and fractional factorial designs, response surface methodology.

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

0404302 (P)

C. Course Type (Required or Elective)

Required (Compulsory department course)

SPECIFIC GOALS

A. Specific Outcomes of Instruction

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

1. **understand the principles of Design of Experiments and also understand that experimentation is the process starting with identification of the problem and formulating hypotheses, then designing to investigate problem experimentally and finally analyze collected experimental data to formulate conclusions and make generalizations. [SLO 1,6]**
2. **Understanding how to apply the three principles for designing experiments: randomization, replication, and stratification to practical problems involving experimentation and data collection. [SLO 1,6]**
3. **Understanding how to explore the general theory of factorial and block designs to find and propose appropriate designs for specific applications. [SLO 1,6]**
4. **Understanding how to evaluate designs using common optimality criteria and use these criteria to compare competing designs. [SLO 1,6]**
5. **Understanding how to apply experimental design theory for any experimental design structure and its corresponding analytical methods for any experimental application. [SLO 1,6,7]**

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 Industrial Experimentation.	1	3
Fundamentals of Design of Experiments.	2,3	6
Understanding key interactions in processes	4,5	6
A systematic methodology for Design of Experiments	6,7	6
Full factorial designs	8	3
Screening designs	9,10	6
Fractional factorial designs	11,12	6
Case Studies	12,14	6
Total	14	42

METHODS OF ASSESSMENT

No.	Method of assessment	Week and Date	%
1	First Exam	6th week	**25**
2	Second Exam	9th week	**25**
3	Final Exam	End of Semester	**50**
Total			**100**