DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
INDUSTRIAL ENGINEERING PROGRAM, BSC.

Course Syllabus

1. **Course number and name**
   IE 575 Design of Experiments

2. **Credits and contact hours**
   (3+0) 3 credit hours, 3 contact hours

3. **Course Type**
   In Person Lectures

4. **Instructor's or course coordinator's name**
   Dr. Fadwa Dababneh

5. **Textbook information**
   Design and Analysis of Experiments by Montgomery (8th Edition)

   a. **Other supplemental materials**
   -instructors notes

6. **Specific course information**
   a. **Catalog description**

Design fundamentals, completely randomized design; randomized complete blocks; Latin square; multiclassification; factorial; nested; incomplete block and fractional replications for 2^n, confounding; general mixed factorials; split plot; analysis of variance in regression models.

   b. **Prerequisites or co-requisites**
   Prerequisite: Statistics and probability II

   c. **The course is:**
   Elective in the Industrial Engineering program.

7. **Specific goals for the course**
   a. **Course outcomes:**
   After completion of the course, students are expected to be able to:
      1. Learn how to plan, design and conduct experiments efficiently and Effectively
      2. Analyze the data results to obtain objective conclusions.

3. Utilize standard statistical software packages for computational purposes.

b. The following student outcomes are addressed by the course:

None.

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
CO(1): Learn how to plan, design and conduct experiments efficiently and Effectively	-	Lectures	Assignment, quiz, and
CO(2): Analyze the data results to obtain objective conclusions.	-	Lectures (Example and Problems)	Assignment and Quiz
CO(3): Utilize standard statistical software packages for computational purposes.	-	Lectures (Example and Problems)	Assignment and Quiz

9. Weekly Teaching Plan

Week	Lecture	Topic	Method of Delivery
1	Lec_1	Overview and Basic Principles (Chaps 1-2)	Lecture
1	Lec_2	Overview and Basic Principles (Chaps 1-2)	Lecture
1	Lec_3	Overview and Basic Principles (Chaps 1-2)	Lecture
2	Lec_4	Overview and Basic Principles (Chaps 1-2)	Lecture
2	Lec_5	Overview and Basic Principles (Chaps 1-2)	Lecture
2	Lec_6	Overview and Basic Principles (Chaps 1-2)	Lecture
3	Lec_7	Simple Designs and Analysis of Variance (Chap 3)	Lecture
3	Lec_8	Simple Designs and Analysis of Variance (Chap 3)	Lecture
3	Lec_9	Simple Designs and Analysis of Variance (Chap 3)	Lecture
4	Lec_10	Simple Designs and Analysis of Variance (Chap 3)	Lecture

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4	Lec_11	Simple Designs and Analysis of Variance (Chap 3)	Lecture
4	Lec_12	Simple Designs and Analysis of Variance (Chap 3)	Lecture
5	Lec_13	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
5	Lec_14	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
5	Lec_15	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
6	Lec_16	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
6	Lec_17	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
6	Lec_18	Block Designs, Latin Squares and Related Designs (Chap 4)	Lecture
7	Lec_19	Full Factorial Designs (Chap 5)	Lecture
7	Lec_20	Full Factorial Designs (Chap 5)	Lecture
7	Lec_21	Minitab	Lecture
8	Lec_22	Full Factorial Designs (Chap 5)	Lecture
8	Lec_23	Full Factorial Designs (Chap 5)	Lecture
8	Lec_24	Minitab	Lecture
9	Lec_25	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
9	Lec_26	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
9	Lec_27	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
10	Lec_28	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
10	Lec_29	Minitab	Lecture
10	Lec_30	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
11	Lec_31	2-level Full Factorial and Fractional Factorial Designs (Chaps 6-8)	Lecture
11	Lec_32	Minitab	Lecture
11	Lec_33	Response surface methods and designs (an overview, part of Chap 11)	Lecture
12	Lec_34	Response surface methods and designs (an overview, part of Chap 11)	Lecture
12	Lec_35	Response surface methods and designs (an overview, part of Chap 11)	Lecture
12	Lec_36	Response surface methods and designs (an overview, part of Chap 11)	Lecture

13	Lec_37	Response surface methods and designs (an overview, part of Chap 11)	Lecture
13	Lec_38	Response surface methods and designs (an overview, part of Chap 11)	Lecture
13	Lec_39	Designs with Random Factors (Chap 13)	Lecture
14	Lec_40	Designs with Random Factors (Chap 13)	Lecture
14	Lec_41	Designs with Random Factors (Chap 13)	Lecture
14	Lec_42	Designs with Random Factors (Chap 13)	Lecture
15	Lec_43	Nested Designs and Split-plot Designs (Chap14)	Lecture
15	Lec_44	Nested Designs and Split-plot Designs (Chap14)	Lecture
15	Lec_45	Nested Designs and Split-plot Designs (Chap14)	Lecture

10. Grade distribution

Assessment	Grade	Date
- Midterm Exam	30%	
-Project Reports /Quizzes/ Seminar /Homeworks ….)	20%	
- Final Examination	50%	

Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.