

## Course E-Syllabus

1	Course title	Applied Statistics
2	Course number	0906702
3	Credit hours	3
	Contact hours (theory, practical)	Theory 3 hours per week
4	Prerequisites/co-requisites	
5	Program title	M.Sc. Industrial Engineering
6	Program code	
7	Awarding institution	The University of Jordan
8	School	Engineering
9	Department	Industrial Engineering
10	Level of course	mandatory course 1 <sup>th</sup> year
11	Year of study and semester (s)	2nd semester 2023/2024
12	Final Qualification	
13	Other department (s) involved in teaching the course	-
14	Language of Instruction	English/Arabic
15	Teaching methodology	X Blended                      Online
16	Electronic platform(s)	Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype                      Zoom <input checked="" type="checkbox"/> Others Microsoft teams
17	Date of production/revision	27/2/2024

### 18 Course Coordinator:

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### 19 Other instructors:

Name:  
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Name:  
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## 20 Course Description:

Advanced topics on probability theory, theory of statistical inference, estimation, sampling distribution, tests of hypothesis, linear and nonlinear regression. Analysis of variance, design and analysis of experiments, and case studies.

## 21 Course aims and outcomes:

### 1. Aims

This course aims to:

- To develop understanding of concepts and statistical techniques in design and analysis of engineering experiments.
- To enhance student skills for implementing design and analysis of experiments in practice and of the professional practice of its tools.
- To encourage statistical techniques; regression and ANOVA to real life applications.
- To increase students' confidence in their probability and statistical tools in practice and their confidence to work as teams.

### 2. Intended outcomes

Course Learning Outcome #	After successful completion of this course, the student will be able to	SO
CLO1	Analyze probability distributions for quality responses in practical applications	1
CLO2	Apply the linear and multi-linear regressions in industrial and service industries	5
CLO3	develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	6
CLO4	The student should be able to work within teams and be prospective managers by a course project, which is accomplished by teams	5

## 22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1-3	1-9	Simple Linear Regression and Correlation	Microsoft teams	1 <sup>st</sup> Exam	
4-6	1-6	Multiple Linear Regression.	Microsoft teams	1 <sup>st</sup> Exam/Final	
7-8	1-6	Analysis of Variance	Microsoft teams	1 <sup>st</sup> Exam	
9-10	1-6	Experiments with Blocking	Microsoft teams	Final Exam	
11	1-3	Factorial Experiments	Microsoft teams	Final Exam	
12-13	1-6	Two-level Factorial Designs	Microsoft teams	Final Exam	
14	1-3	Blocking and Confounding Systems for Two-level factorials	Microsoft teams	Final Exam	
15-16	1-6	Two-level Fractional Designs	Microsoft teams	Final Exam	

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz...etc

## 23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
First Exam	25%	Simple Linear Regression and Correlation	6-8	
		Multiple Linear Regression		
Second Exam	25 %	Analysis of Variance Experiments with Blocking Factorial Experiments	10-13	
Final Exam	40%	Experiments with Blocking Factorial Experiments Two-level Factorial Designs Blocking and Confounding Systems for Two-level factorials Two-level Fractional Designs	16-18	
Presentation and Assignment	10 %	Presentation and Assignment		

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**24 Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):**

Student should have the text book, a computer and internet connection.

**25 Course Policies:**

A- Attendance policies: all students are expected to attend all one line meetings. Any student with more than 15% missing classes is subject to be failed in the class.

B- Absences from exams and submitting assignments on time: all students should submit the assigned quizzes, short late submission is permissible if the student had internet issues during the exam. Final exam is expected to be on campus and all absent student are subject to the university regulation for accepting their absence excuse through the office of the assistant dean for student affairs

C- Health and safety procedures: During the exams in the University, students shall abide to health safety regulations by wearing masks/Gloves, wash hands, and distancing.

a. D- Honesty policy regarding cheating, plagiarism, misbehavior: Discuss the assignments among yourselves. This is helpful to the learning process. However, direct copying of others work will NOT be allowed or tolerated and will result in a reduction of grade.

E- Grading policy:

Assignment and project	: 10-15%
Exams	: 45-50%
Final	: 40%
Total	:100%

F- Available university services that support achievement in the course: School of engineering computer labs/Exam halls

**26 References:**

A- Required book(s), assigned reading and audio-visuals:

1. D. Montgomery (2015). *Design and Analysis of Experiments*. 7<sup>th</sup> Edition, John Wiley & Sons.
2. D. Montgomery and G. Runger (2018). *Applied Statistics and Probability for Engineers*. 7<sup>th</sup> Edition, John Wiley & Sons.
3. Instructor's notes

## 27 Additional information:

The B.Sc. in industrial Engineering program enables students to achieve, by the time of graduation the following program learning outcome (SOs)			
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
2	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 factors	7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
3	an ability to communicate effectively with a range of audiences		
4	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 meet objectives		

Name of Course Coordinator: Abbas Al-Refaie -Signature: *Abbas Al-Refaie* Date: 5/10/2020

Head of Curriculum Committee/Department: Signature: -----

Head of Department: Signature: -----

Head of Curriculum Committee/Faculty: -----Signature: -----

Dean: ----- Signature: -----