COURSE DESCRIPTIONS

Faculty	Engineering				
Department	Civil Engineering			**NQF level**	9
Course Title	Advanced Applied Statistics	**Code**	704723	**Prerequisite**	
Credit Hours	3	**Theory**	3	**Practical**	0
Course Leader	Dr. Faten Albtoush	**email**	f.albtoush @jadara.edu.jo		
Lecturers	Dr. Faten Albtoush	**emails**	f.albtoush @jadara.edu.jo		
Lecture time	[12:00 – 15:00] Sat & Sun	**Classroom**	D311	**Attendance**	Fulltime
Semester	3rd Semester	**Production**	10/2022	**Updated**	6/2024
Type of Teaching	■ Face to Face	☐Blended	☐ Online		

Short Description
Descriptive Statistics, Inferential Statistics; Discrete and Continuous Probability Distributions, Normal Distribution and Binomial Approximation; Distribution of Xbar, Confidence Interval and Point Estimation; Tests of Hypothesis; Linear and Multiple Regression. Use of Statistics software.
Course Objectives
1. Competence in the design of scientific engineering research in statistics. 2. Skills in the use of a EXCEL spreadsheets and Statistics Software and perform required analysis

Course Intended Learning Outcomes (CILOs)
A. Knowledge - Theoretical Understanding
a1. Understand statistics theories, principles, and algorithms. a2. Remember statistics concepts, definitions, and terminology.
B. Knowledge - Practical Application
a3.
C. Skills - Generic Problem Solving and Analytical Skills
b1. Solve statistics problems. Find summary statistics, compute probabilities of discrete and continuous distributions, solve for mue and sigma for discrete distributions. Find the confidence intervals and point estimates of mue, reject or accept hypothesis, solve regression parameters and find sigma squared and formula of the regression curve. b2. Analyze and interpret data, tabulate data, obtain histograms, Box-Plots, and Stem-Leaf diagrams.
D. Skills - Communication, ICT, and Numeracy
c1. Ability to design a statistical experiment, plan for sampling data collection, establish statistical inferences/conclusions from results, work in teams, demonstrate leadership, establish goals and

achieve planned objectives timely, Evaluate scientific literature, Create a Scientific Journal Paper on a Statistical application in Construction Project Management.
E. Competence: Autonomy, Responsibility, and Context
Teaching and Learning Methods
■ Face to Face Lectures ☐ Brain Storming ☐ Synchronous remote ☐ Asynchronous remote ☐ Using Video ■ Discussions ■ Research Project ☐ Case Study ☐ Field visit ■Problem solving
Assessment Methods
☐ Formative Assessment ■ Quiz ☐ Lab Exam ■ Homework ■ Project Assessment ■ Oral Presentation ■ Midterm ■ Final Exam

Course Contents					
Week	**Hours**	**CILOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1.	3	a1, a2	Chapter 1: Introduction of Statistics.	Face to Face Lectures	Homework
2.	3	a1, a2, b1, b2,	Chapter 6: Descriptive Statistics	Face to Face Lectures	Homework
3.	3	a1, a2, b1, b2,	Chapter 6: Descriptive Statistics	Face to Face Lectures	Quiz
4.	3	a1, b1, b2,	Chapter 3: Discrete Distributions.	Face to Face Lectures	Homework
5.	3	a1, b1, b2,	Chapter 3: Discrete Distributions.	Face to Face Lectures	Quiz
6.	3	a1, b1, b2,	Chapter 4: Continuous Distributions	Face to Face Lectures	Homework
7.	3	a1, b1,	Chapter 4: Continuous Distributions	Face to Face Lectures	
8.	Midterm Exam 30%				
9.	3	a1, b1, b2,	Chapter 7: Sampling distributions.	Face to Face Lectures	Homework
10.	3	a1, b1, b2,	Chapter 8: Confidence Intervals	Face to Face Lectures	Quiz
11.	3	a1, b1, b2,	Chapter 9: Hypothesis testing	Face to Face Lectures	Homework
12.	3	a1, b1, b2,	Chapter 9: Hypothesis testing	Face to Face Lectures	Homework
13.	3	a1, b1,	Chapter 11: Regression Analysis	Face to Face Lectures	Quiz

		b2,			
14.	3	b1, b2, c1,	Use of Statistics Software	Face to Face Lectures	Homework
15.	3	a1, a2, b1, b2, c1	Term Project Report & Presentation	Face to Face Lectures	Presentation
16.	2	Final Exam 40%			

Infrastructure	
Textbook	Title: Applied Engineering Statistics. Author: Montgomery, D.& George Runger. Year: 2020
References	Solution Manual of Text Title: Elementary Statistics. Author: Larson, R. and Betsy Farber. Year: 2021
Required reading	Watch You-Tube videos for each Ch.
Electronic materials	**Handouts & lecture links loaded on e-learning system.**
Other	**Jadara e-learning system.**

Course Assessment Plan

Assessment Method		Grade	CILOs						
			a1	a2	b1	b2	c1	c2	c3
First (Midterm)		30	5	5	10	10			
Second (if applicable)									
Final Exam		40	5	5	15	15			
Coursework									
Coursework assessment methods	Assignments	30			5	5	10		
	Case study								
	Discussion and interaction					5	5		
	Group work activities								
	Lab tests and assignments								
	Presentations								
	Quizzes								
Total		100	10	10	30	35	15		

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of

all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.