COURSE DESCRIPTIONS

Faculty	Science and Information Technology				
Department	Mathematics			NQF level	
Course Title	Probability and Statistics 1	Code	853130	Prerequisite	
Credit Hours	3	Theory	3	Practical	0
Course Leader	Dr.Hamzeh Zureigat	email	hamzeh.zu @jadara.edu.jo		
Lecturers	Dr.Hamzeh Zureigat	emails	hamzeh.zu@jadara.edu.jo		
Lecture time	11:30 – 01:00 a.m.	Classroom	D009		
Semester	First semester	Production	2021	Updated	2022

ShortDescription
A three Credit Hours compulsory course for students in the college of Science & Information Technology. The course content includes some presentation techniques and description of statistical data. Probability: concept of probability, basic rules of probability includes independence and conditional probability. Random variables and probability distributions, expectation, Binomial distribution, Poisson distribution, Normal distribution. Sampling distributions, t-distribution, CLT. Estimation, point and interval estimation for normal population mean and the difference of two population means. Testing hypotheses, the z-test, the t-test, testing the difference between two means (small and large sample sizes). Correlation and simple linear regression, residuals analysis, interval estimation of regression parameters.

Course Objectives
1) Represent a given set of data graphically and compute and interpret descriptive statistics measures.
2) Construct confidence intervals and tests of hypotheses for some unknown normal population parameters.
3) Diagnose and interpret the interrelationship between two variables through the analysis of correlation coefficients and simple linear regression.

Learning Outcomes
A. Knowledge - Theoretical Understanding
a1. Explain the basic rules of probability and probability distributions.
B. Knowledge - Practical Application
a2. Find estimates for unknown parameter.
a3. Analyze the relationship between two variables.

C. Skills - Generic Problem Solving and Analytical Skills
b1. Compute different descriptive statistics measures to describe different types of data.
b2. Construct tests of hypotheses for unknown population parameters.

D. Skills - Communication, ICT, and Numeracy

E. Competence: Autonomy, Responsibility, and Context

Teaching and Learning Methods
• Lecture, Group work, and discussion

Assessment Methods
• Exams Midterm • Final exam • Quizzes • Assignments and Class Assignments.

			Course Contents			
W	day	Contact Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1	Su	1.5	b1, b2	introduction	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	1.5	b1, b2	Descriptive and inferential statistics. Types of data.	Distance learning	
2	Su	1.5	b1, b2	Graphical presentation of data. summary of measures of center,	Face to face learning.	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	1.5	b1, b2	measures of dispersion	Distance learning	
3	Su	1.5	a1	Counting techniques: permutations.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	1.5	a1	Combinations.	Distance learning	
4	Su	1.5	a1, a2	Definition, axioms, rules of probability,	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	1.5	a1, a2	Conditional probability & and independence	Distance learning	
5	Su	1.5	a1,a2,	Random variables and probability distributions: discrete and continuous distributions mean and variance.	Face to face learning	Assignments, Exams, Quizzes,

	Th	**1.5**	a1,a2,	Distributions function for discrete & continuous distributions**.**	Distance learning	Discussion and Interaction
6	Su	**1.5**	a1,a2,	The mean and the variance of discrete random variables.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,	the mean and the variance of continuous random variables	Distance learning	
7	Su	**1.5**	a1,a2,	some discrete random variables: binomial	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,	Poisson & hypergeometric	Distance learning	
8	Su	**1.5**	a1,a2,	some continuous random variable, normal distribution	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,	Standard normal & exponential.	Distance learning	
9	Su	**1.5**	a1,a2,b2	sampling distribution of the sample mean	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,b2	central limit theorems	Distance learning	
10	Su	**1.5**	a1,a2	Estimation: estimation of the population means and variance.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2	estimation for the normal distribution	Distance learning	
11	Su	**1.5**	a1,a2,b2	Estimation of the population proportion.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,b2	Determination of the sample size.	Distance learning	
12	Su	**1.5**	a1,a 2,b2	Interval estimation: the idea of testing, types of error.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a 2,b2	test for single mean variance known	Distance learning	
13	Su	**1.5**	a1,a 2,b2	test for single mean variance unknown	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a 2,b2	tests for single proportion	Distance learning	

14	Su	**1.5**	a1,a2,b2	Tests for the difference between two population means.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a1,a2,b2	Hypothesis testing: testing hypothesis for the difference between two population proportions.	Distance learning	
15	Su	**1.5**	a3	Scatter plots and Pearson correlation coefficient.	Face to face learning	Assignments, Exams, Quizzes, Discussion and Interaction
	Th	**1.5**	a3	Linear relationship and linear regression.	Distance learning	
16		**3**		Final Exam week		

Infrastructure	
Textbook	John E. Freund's Mathematical Statistics with Applications By Irwin Miller and Marylees Miller Pearson; 8th Edition (2019).
References	1) Introduction to Mathematical Statistics (1995) By Robert V. Hogg & Allen T. Craig, Prentice Hall, 5th edition. 2)في الحصائية تأليف د. محمد صبحي ابو صالحمبادئ . 3) Statistical Inference, Al-BASHEER ZEN Al ABIDEEN
Required reading	
Electronic materials	
Other	**Handout check eLearning**

Assessment Method	Grade	a1	a2	a3	b1	b 2
First(Midterm)	30	14	8		8	
Second (if applicable)	0					
Final Exam	50	10	20	8		12
Coursework	20					
Coursework assessment methods — Assignments	5			5		
Coursework assessment methods — Case study						
Coursework assessment methods — Discussion and interaction	5		5			
Coursework assessment methods — Group work activities						
Coursework assessment methods — Lab tests and assignments						
Coursework assessment methods — Presentations						
Coursework assessment methods — Quizzes	10				5	5
Total	**100**					

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.

مدرس المساق: د. حمزة زريقات

رئيس القسم: د. أيمن هزايمه