Jordan University of Science and Technology

Faculty of Science & Arts

Mathematics Department

MATH131 Elements Of Statistics

First Semester 2023-2024

Course Catalog
3 Credit Hours. Presentation and description of statistical data. Probability: concept of probability, probability rules. Random variables and probability distributions, expectation, Binomial distribution, Normal distribution. Sampling distributions, t-distribution, central limit theorem. 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, estimation and testing hypothesis, residuals analysis

Text Book	
Title	Elementary Statistics, Step by Step Approach.
Author(s)	A.G. Bluman
Edition	6th Edition
Short Name	TextBook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 1	Introduction to Statistics	J. S. Milton and J. J. Meteer	1st Edition	

Instructor	
Name	**Dr. Mahmoud Smadi**
Office Location	PH2 L1
Office Hours	
Email	smadi@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue, Thu : 13:30 - 14:30
Room: SF12

Section 2:
Lecture Time: Mon, Wed : 08:30 - 10:00
Room: SF12

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Basic Concepts: types of data, sampling methods, defining descriptive and inferential statistics. Descriptive Statistics: Graphical summary, Measures of center	
Week 2	Measures of dispersion, measures of position and percentiles, box-plots	
Week 3	Probability: Counting techniques, definition, axioms, rules of probability	
Week 4	Conditional probability and independence	
Week 5	Discrete probability distributions: random variables, mean and variance, Binomial distribution	
Week 6	Continuous distributions: normal distribution	
Week 7	Central Limit Theorem, normal approximation to binomial	
Week 8	Estimation: point estimation for mean, variance, and proportion	
Week 9	Interval estimation for mean, variance, and proportion	
Week 10	Sample size determination for estimation of mean and proportion	
Week 11	Testing hypothesis: Basic concepts, types of error, z and t -test for the mean, z test for the proportion	
Week 12	Hypothesis Testing: Testing hypothesis the difference between two means for two independent samples (z and t test), F test for the equality of two variances	
Week 13	Paired t-test, z test for two proportions	
Week 14	Correlation and Regression: scatter plot, Pearson correlation coefficient, simple linear regression model, estimation of regression coefficients and error variance	
Week 15	Testing hypothesis and model diagnostics	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Be able to describe data with tabular, visual, and numerical summaries. [1SLO1, 1SLO3]	30%	
Be able to understand the basics and rules of probability. [1SLO1]	16%	
Be able to identify the types of random variables involved in a given problem and calculate relevant probabilities for binomial and normal distributions. [1SLO3]	14%	
Be able to calculate and interpret the point estimates of means and proportions and their confidence intervals. Perform hypotheses tests of means, proportions, and variances using both one-and two-sample data sets. [1SLO3]	34%	
Be able to carry out analysis of simple linear regression model. [1SLO3]	6%	

Relationship to Program Student Outcomes (Out of 100%)					
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
31		69			

Evaluation	
Assessment Tool	**Weight**
First Exam	30%
Second Exam	30%
Final Exam	40%

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