



Jordan University of Science and Technology
Faculty of Science & Arts
Mathematics Department

MATH235 Probability & Statistics(For Engineering Students)

Summer Semester 2019-2020

Course Catalog

3 Credit Hours. This course introduces students to various aspects of statistical analysis. The objective is to expose the students to elements of probability and probability distributions, and statistical inference. We try to keep a balance between theory and methodology.

Text Book

Title	Probability and Statistics for Engineering and the Sciences
Author(s)	J. L. Devore
Edition	8th Edition
Short Name	TextBook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 1	Introduction to Probability and Statistics, Principles and Applications for Engineers and Computing Sciences	J.S. Milton and J.C. Arnold	4th Edition	
Ref 2	Applied Statistics and Probability for Engineers	D. Montgomery and C. Runger	4th Edition	
Ref 3	Applied Probability and statistical Methods	G. C. Canavos	1st Edition	

Instructor

Name	Prof. Mohammad Al-Towaiq
Office Location	Ph L0

Office Hours	Sun : 10:00 - 11:00 Mon : 13:00 - 15:00 Tue : 13:00 - 15:00 Wed : 10:00 - 11:00
Email	towaiq@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Mon, Tue, Wed : 11:30 - 13:00 Room: منصة الكترونية

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Chapter 1 (Descriptive Statistics): types of data, populations, samples, pictorial and tabular methods, measures of location, measures of variability and measures of shape	. From TextBook
Week 2	Chapter 2 (Probability): 2.1 Sample Spaces, 2.2 Axioms, rules of probability, 2.3 Counting techniques Probability 2.4 Conditional Probability and Independence	. From TextBook
Week 3	Chapter 3 (Discrete random variables and probability distributions): 3.1 Random Variables 3.2 Probability Distributions discrete random variables 3.3 Expected Values	. From TextBook
Week 4	Chapter 3 (continued): 3.4 Binomial Distribution 3.5 Hypergeometric and Negative Binomial Distribution 3.6 Poisson Distribution	. From TextBook
Week 5	Chapter 4 (Continuous Random Variables and Probability Distributions): 4.1 Probability density functions, 4.2 Cumulative Distribution function and expected values	. From TextBook
Week 6	Chapter 4 (continued): 4.3 Normal Distribution 4.4 The Exponential and Gamma Distributions	. From TextBook
Week 7	Chapter 5 (Joint Probability distributions and Random samples): 5.1 Jointly Distributed Random Variables(discrete and continuous) 5.2 Expected Values, Covariance, and Correlation	. From TextBook
Week 8	Chapter 5 (continued): 5.3 Statistics and Their Distributions 5.4 The Distribution of the Sample Mean	. From TextBook
Week 9	Chapter 6 (Point estimation): 6.1 Some general concepts of point estimation 6.2 Methods of Point Estimation	. From TextBook
Week 10	Chapter 7 (Statistical intervals based on a single sample) 7.2 Large-Sample Confidence Intervals for a Population Mean. 7.3 Intervals Based on a Normal Population	. From TextBook
Week 11	Chapter 8 (Tests of hypothesis based on a single sample): 8.1 Hypotheses and Test Procedures	. From TextBook
Week 12	Chapter 8 ((continued) 8.2 Tests About a Population Mean	. From TextBook
Week 13	Chapter 9 (Inferences based on two samples): 9.2 Two independent samples t-test 9.3 Paired t-test.	. From TextBook

Week 14	Chapter 12 (Simple Linear Regression and Correlation): 12.1 The Simple Linear Regression Model 12.2 Estimating Model Parameters	. From TextBook
Week 15	Chapter 12 (continued): 12.3 Inference about the slope parameter 12.5 Correlation	. From TextBook
Week 16	Final Exam Week	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Calculate and interpret various descriptive statistics using numerical and graphical methods [1SLO1]	5%	First Exam
Understand the basic concepts of probability, rules, conditional probability, total probability and Bayes theorem [1SLO1, 1SLO5]	20%	First Exam, Final Exam
Understand the concept of random variables (discrete and continuous), know the definition of density function and distribution function, compute the mean, variance and of random variables, know and apply some common discrete distributions (binomial, Poisson, geometric, hypergeometric) and continuous distributions(exponential, Gamma, and normal) [1SLO1, 1SLO2]	30%	First Exam, Second Exam, Final Exam
Understand the definition of joint distributions, conditional distributions, and covariance function [1SLO1, 1SLO2]	8%	Second Exam, Final Exam
Understand the concepts of point and interval estimations of population parameters from data sets and use the sampling distributions to construct confidence intervals for population means and proportions. [1SLO1, 1SLO5]	15%	Second Exam, Final Exam
Understand the basic components of hypothesis testing and perform hypothesis tests on population means and proportions. [1SLO1, 2SLO5]	15%	Final Exam
Use Linear Regression to describe the relationship between two variables and perform hypothesis tests and confidence intervals for the slope. [2SLO5]	7%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)					
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
46.50	19			34.50	

Evaluation	
Assessment Tool	Weight
First Exam	30%
Second Exam	20%
Final Exam	50%

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