Syllabus and Contents of Course for First Semester 1446

COURSE NAME: INTRODUCTION TO PROBABILITY AND STATISTICS. **COURSE NUMBER: STAT 101**	**CREDIT HOURS: 3 HOURS** **ACTUAL HOURS: 4 HOURS**
Head of the Department: Dr. Abdulrahman Alzahrani **E-mail: chair-math@cfy.ksu.edu.sa**	**Office: 2562** **Phone: 94070**
Course Coordinator: Prof. Dr. Hamid Al-Oklah **E-mail: stat140@cfy.ksu.edu.sa**	**Office: 2469** **Phone: 94582**
Textbook: Introduction to Probability and Statistics, Sixth Edition, 2022. **Authors: Abouammoh A., Sultan K., Kayid M. and Sharahili M.**	

Some References:

1- Nicholas, Jackie. Introduction to Descriptive Statistics. Mathematics Learning Centre, University of Sydney, 1990.

2- Samules, M.L., Witmer, J.A and Schaffner, A., Statistics for the Life Sciences. Fourth edition, Pearson, New York, 2012.

3- Walpole, R.E., Myers, R.H. and Myers, S.L. and Ye, K., Probability and Statistics for Engineers and Scientists, Ninth Edition, Prentice, New York, 2012.

Goals: In this course

a) The student will able to understand some statistical concepts and using there.

b) The student will able to classify the variables and data in to quantitative qualitative.

c) The student will able to compute some measurements of central tendency, determine some position measurements and their representation on Box Plot diagram.

d) The student will able to compute some measurements of dispersion, determine some measurements which used for compare the variation between two (or more) sets.

e) The student will able to determine the space of elementary events of some random experiment, compute the probability of events which dependent on a random experiment, understanding the conditional probability, using the total probability formula and Bayes formula in probability calculation.

f) The student will able to understand the concept of the random variable and its probability distribution, types of the random variables, computing the mean and standard deviation of discrete random variable, the meaning of continuous random variable, understanding applications of uniform, exponential and normal distributions.

g) The student will able to understand the concept of the point and interval estimation for a parameter of population, determine the confidence interval for a parameter of population, understanding the concept of the test hypothesis and perform testes for parametric hypotheses.

h) The student will able to calculate Pearson's simple linear correlation coefficient, determination the straight linear regression (type Y on X) according to the lest square method.

Course Schedule and Contents:

Chapter	Week	Required	Examples	Exercises for Students
------------------	**1**	**Induction Program**	-----------	-----------------------------
Chapter One DESCRIPTIVE STATISTICS	2	**Explanation of the Crocker plan for the course** 1.0- Introduction. 1.1- Basic Concepts and Dentitions.	All examples	1, 2, 3, 4, 5, 6-a, 7, 8-a, 9, 10, 11-a, 13-a-b, 25-a-b, 26-a-b, 27.
	3	1.2- Organizing the Data. 1.3- Graphical Representation of the Data.	All examples	
	4	1.4- Measures of Central Tendency (Mean, Median and Mode).	All examples	6-b-c, 8- b-c-d-e, 12-d-e, 13-c, 14, 15-a, 16, 17, 19, 20, 21, 22-a, 23-a, 25-c.
	5	1.4- Measures of Central Tendency (Percentiles, Deciles, … up to the end of this section).	All examples	
	6	1.5- Measures of dispersion, Coefficient of Variation and z-scores. National Day: Sunday + Monday	All Contents	11-b, 12-a-b-c, 15--b-c, 18, 19, 22-b-c-d, 23-b-c-d, 24, 26-c.
Chapter Two PROBABILITY	7	2.1- Mathematical Concepts. 2.2- Definitions and Concepts in Probability Calculus.	All examples	1, 2, 3, 4, 5, 6,
	8	2.3- Concept of Probability Function. 2.4- Conditional Probability and Independence of Events.	All examples	7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23.
Chapter Three RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS	9	3.1- Concept of Random Variables and Their Distributions.	All examples	1, 2, 5, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 28, 29, 30, 31.
	10	3.2- Discrete Random Variables and Their Distributions.	All examples	
	11	3.3- Continuous Random Variables and Their Distributions.	All examples	18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 32, 33, 34, 35, 36, 37.
Chapter Four INTRODUCTION TO STATISTICAL INFERENCE	12	4.1- Definitions and Concepts. 4.2- Estimation of the Population Mean.	All examples	1, 2, 3, 4, 5, 6, 7, 10, 24-a, 26, 27, 28.
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	13	4.3- Estimation of the Population Proportion. 4.4- Introduction to Hypotheses Testing.	All examples	8, 9, 11, 12.
	14	4.5- Hypotheses Testing for the Population Mean. 4.6- Hypotheses Testing for the Population Proportion.	All examples	13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24-b, 25.
Chapter Five CORRELATION AND REGRESSION	15	5.1- Linear Correlation Coefficient. 5.2- Simple Linear Regression.	All examples	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13.14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26.

Note: The trainer may suffice with one example in case that other examples have the same idea and leave the rest of the examples to the student as a self-study.

Important Instructions:

1- Absence shall be counted from the first day until the last day preceding the final exams for the semester.

2- If the student delayed more than ten minutes of the lecture is absent, and if the presence during the first ten minutes register late.

3- The student is deprived of the final exam if the percentage of absenteeism exceeded **25%** of the hours of attendance approved for teaching.

4- The student is evaluated during the semester based on:

    a) Two paper home works, each with four degrees ($4 + 4 = 8$),

    b) Two electronic home works with scores of ($2.5 + 2.5 = 5$), degrees and two electronic home works in the resource center for basic sciences with scores of ($1 + 1 = 2$), degrees,

    c) Discussions and activity with a score of **10** degrees,

    d) A midterm exam with a score of **25** degrees,

    e) A final exam with a score of **50** degrees.