Kingdom of Saudi Arabia
King Saud University
Deanship of Common First Year
Department of Basic Sciences

Syllabus and Course Contents – Second Semester 1447H

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: cfy_BSD_char@ksu.edu.sa**	**Office: 2562** **Phone: 94070**
Course Coordinator: Dr. Mustafa Salah Shama **E-mail: cfy_BSD_cst1@ksu.edu.sa**	**Office: 2434** **Phone**: ……..

Textbook: Introduction to Probability and Statistics, Sixth Edition, 2022.

Authors: Abouammoh A., Sultan K., Kayid M. and Sharahili M.

❖ Contents:

1. Getting and Organizing Statistical Data

- Fundamental concepts and definitions: data, population, sample, variables, parameters, and statistics.
- Methods of data collection and organization of raw data.
- Representation of data using tables and graphical methods (frequency distributions, bar charts, pie charts, histograms, polygons, ogives).

2. Measures of Central Tendency and Position

- Measures of central tendency: mean, median, and mode.
- Measures of position: quartiles, deciles, and percentiles.
- The five-number summary and graphical representation of data using box plots.

3. Measures of Variation

- Measures of dispersion: range, variance, and standard deviation.
- Interquartile range and coefficient of variation for comparing data sets.
- Standardized scores (z-scores) and their interpretation.

4. Probability and Random Experiments

- Basic concepts of probability and elementary events.
- Space of elementary event, events, and algebra of events.
- Probability functions and their properties.
- Conditional probability and independence of events.

5. Random Variables and Probability Distributions

- Definition and types of random variables: discrete and continuous.
- Probability distribution functions.
- Mathematical expectation and variance of random variables.
- Common discrete and continuous distributions.
- Standardization of random variables.

6. Introduction to Statistical Inference

- Estimators of population parameters.
- The Central Limit Theorem and its applications.
- Point and interval estimation.
- Confidence intervals for the population mean and proportion.
- Statistical hypotheses and hypothesis testing for the population mean and proportion.

7. Correlation and Regression Analysis

- Pearson's correlation coefficient and the coefficient of determination.
- Interpretation of correlation.
- Simple linear regression and the regression line.
- Applications of correlation and regression in data analysis.

❖ Distribution of grades on semester works and exams

Two paper home works	Class Participation and Activities	Midterm Exam	Final Exam	Total
10	15	25	50	100