

**KING FAHD UNIVERSITY OF PETROLEUM & MINERALS**  
**DEPARTMENT OF MATHEMATICAL SCIENCES**  
**DHAHRAN, SAUDI ARABIA**  
*STAT319: PROBABILITY & STATISTICS FOR ENGINEERS & SCIENTISTS*  
**Laboratory Outline (semester 072)**

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**Office Hours: SMW 2:10 – 3:10 PM**

**Course Objectives:**

- This Lab of STAT 319 course is aimed at helping the student in the following ways:
1. To easily understand and appreciate the practicability of the concepts taught in the STAT 319 curriculum.
  2. To develop their ability to properly analyze and solve problems, and reasonably interpret their results.
  3. To learn how to use STATISTICA in solving a range of statistical problems.

**Assessment**

Assessment for this Lab will be based on class work, attendance, and six lab quizzes, as in the following:

<b>Activity</b>	<b>Weight</b>	<b>Marks</b>
Class Work + Attendance	33%	5
6 Quizzes	67%	10
Total	100%	15

**Resources**

Students must bring the Lab Manual with them to every lab session.

**Suggested Class work and Tutorial Problems**

Students are encouraged to do the problems in the Lab using Statistics.

**Syllabus, weekly coverage of material and quizzes schedule (Tentative)**

<b>Week</b>	<b>Topic</b>	<b>Section</b>
<b>01</b> <b>16/2 - 20/2</b>	<b>No labs</b>	
02 23/2 - 27/2	<b>Introduction to STATISTICA:</b> Creating a new data sheet, Naming the variables, Saving and retrieving file types, Copying results into text.	1.1-1.2
03 01/3 - 05/3	<b>Drawing simple random samples by a table of random number and by STATISTICA.</b>	2.1-2.2
04 08/3 – 12/3	<b>Graphical description of data:</b> Stem and Leaf and Frequency table. General discussion on shapes of distributions. <b>Graphs of Frequency Distributions:</b> Histogram, Frequency-Plot and Frequency polygon, Bar Chart and Pie Chart.	2.3-2.4 2.5-2.6
05 15/3 – 19/3	<b>Numerical Measures:</b> Mean, Median and Mode, Range, Variance, Standard Deviation, Percentiles, Quartiles. Descriptive Statistics using STATISTICA. Empirical Rule, Coefficient of Variation and Skewness and Sample Proportion. Box-plot and approximate Mean and Variance of Grouped Data.	2.7-2.10 <b>Quiz 1</b>
06 22/3 - 26/3	<b>Discrete Probability Distributions:</b> Binomial, Geometric, Hypergeometric, & Poisson.	3.1-3.4 <b>Quiz 2</b>
07 29/3 – 02/4	Use of Z-table, Probability Calculator and Normal distribution	4.1,4.3
08 05/4 - 09/4	Normal Approximation to the Binomial Distribution. Use of t-table and Probability calculator Exponential, Gamma, Weibull, Lognormal, and Beta distributions.	5.2& 5.4 4.2 & 4.4 <b>Quiz 3</b>
<b>10/4 – 18/4</b>	<b>MIDTERM VACATION</b>	
<b>09</b> <b>19/4 – 23/4</b>	<b>No labs</b>	
10 26/4 - 30/4	Drawing a Random Sample from a known Distribution. Use of $\chi^2$ and F Tables also by using STATISTICA (under probability calculator). Sampling Distributions of Sums and Means and the Central Limit Theorem.	5.1& 5.3-5.5 <b>Quiz 4</b>
11 03/5 - 07/5	Point Estimation, Confidence Interval Estimation for the Population Mean, Computing Confidence Intervals using STATISTICA, and Confidence Interval Estimation of the Difference Between Two Population Means Large Sample Confidence Interval Estimation of a Population Proportion. <i>(only by STATISTICA)</i>	6. 1-6.5
12 10/5 - 14/5	Testing Hypotheses about a Population Mean, Testing the Difference between Two Population Means and Large Sample Tests of Proportions. <i>(only by STATISTICA)</i>	7.1-7.3 <b>Quiz 5</b>
13 17/5 – 21/5	Linear Regression: Scatter Diagram, Correlation Coefficient, Estimating of line of best fit, Sources of variation, multiple regressions, and checking the model assumptions.	8.1-8.4 & 8.9-8.10
14 24/5 - 28/5	Confidence Interval estimation of regression parameter, Prediction Interval (PI) for a Future Observation $y_o$ , Testing the Slope of the Regression Line (testing of significance of the regression by a t-test and by F-test),	8.5-8.9 <b>Quiz 6</b>
<b>15</b> <b>31/5-04/6</b>	<b>No labs</b>	